The Milling World and Chronicle of the Grain and Flour Trade.

PUBLISHED EVERY THURSDAY MORNING.

VOL. XI.—NO 2. Buffalo, N. Y., November 13, 1884. $1.50 Per Year. Single Copies, 3 Cts.

THE COMPOSITION OF AMERICAN WHEAT.

FOR the purpose of obtaining as complete information as possible with regard to the composition of our American cereals, the Department of Agriculture has had an extensive series of analyses made by the chemist of the department, Prof. Richardson, the results of which have recently been published as "Bulletin No. 4."

From the vast amount of information thus made serviceable, we copy the following analysis made from a series, consisting of seventy-two specimens from the mill of C. A. Pillsbury & Co., at Minneapolis, using "hard spring wheat."

The wheat as it enters the mill is subjected to a series of operations which removes dirt, foreign seed, the fuzz at the end of the berry, and a certain portion of the outer coats, through the agency of a run of stones and brushes. The result of this operation is to lower the amount of inorganic matter or ash and to increase or decrease the other constituents but slightly, the albuminoids being a few tenths of a per cent. greater in amount. The point from which a convenient start may be made is at the first break.

The chop from the first rolls is very marked in its difference in composition from the original wheat. It of course has less fiber, and as will be seen, less ash, oil, and albuminoids; in fact, it is starchy. It contains more water, owing to the fact that its comminution has allowed it to absorb the moisture from the air, and in general it will be observed that the coarser or more fibrous a specimen is the less water it contains, while the finer material holds more. For example, the percentage of water in several portions of the grain is as follows:

	Per cent.
Original grain	9.66
Ready for the break	8.23
Chop from first break	12.52
Fifth break	7.62
Bran	10.91

The heat caused by the friction of the process, of course, is an active agent, as may be seen on comparing the original grain, and that ready for the break.

The starchy chop from the first break is carried off to the various purifying and grading machines, but for the present it will be left, as it is desirable to follow the breaks to the end.

The tailings from the first scalper, consisting of the wheat grain split open along the crease, which serve to feed the second break after the cleaning which they undergo, vary but little from the wheat which goes to the first break. There are slight differences which must be attributed to the difficulty of selecting and preparing for analyses samples of the product of the different breaks, the finer chop having a tendency to sift out from the lighter bran, but they are not great enough to vitiate the conclusions. In the first break so little is done, except to crack open the wheat and clean it for the following rolls, that only a small change should be expected.

The chop from the second break is more from the center of the wheat grain. It contains less ash, fat, and albuminoids than any of the break products, and includes, as was shown by our preliminary investigation, the greater portion of the endosperm.

The tailings supplying the third break already show, owing to the greater amount of chop produced on the second break, a marked increase in those constituents which are peculiar to the outer portions of the grain, that is to say, there has been a marked increase in ash, fiber, and albuminoids. This increase becomes still more apparent from break to break until the bran alone is left, which contains more ash and fiber than any other product of the wheat. The several chops increase in a like manner, the last or sixth break chop holding more albuminoids than the bran, and even any other of the resulting material. This is probably due to the comminution of the bran in the last break, and consequently, as will be seen, the middlings from this chop are richer in nitrogen than any other, although not the richest in gluten owing to the bran and germ which they contain.

Having followed the grain through the breaks to the bran, the products of the purification of the chop remain to be studied.

The shorts, or branny particles removed from the chop or from the middlings by aspirators, contain much less fiber and ash than the bran, although they are of similar origin, that is to say, from the outer coats of the grain. The analyses point to their origin from those portions of the coat which contain less ash and fiber.

The middlings are graded into five classes, and in their original uncleaned state they differ chemically in the fact that from No. 1 to No. 5 there is a regular decrease in ash, fiber, and fat, while No. 5 is richer in albuminoids than any other. This would be expected from our preliminary examination which showed a decrease in bran from beginning to end, and that No. 5 was the purest endosperm.

After cleaning, the same relations hold good, but owing to the removal of the branny particles there is in all cases a loss of ash constituents and fiber. The effect of cleaning is more apparent in Nos. 1 and 2 where more bran is removed.

The reduction of the middlings on smooth rolls changes the composition but slightly, and the flours which originate from this process are very similar to the middlings from which they were produced. That from the fourth reduction is richer in nitrogen, as would also be the case with the fifth, though want of a specimen prevented an analysis.

The tailings from the middlings purifiers present the usual characteristics of by-products which owe their existence to the outer part of the grain with its high percentages of ash and fiber, and, in this case also of nitrogen. It is remarkable, however, that the tailings marked No. 6 contain one-third as much ash as the others, but this is explained by the fact that they are largely composed of endosperm.

The tailings from the different reductions are nearly alike in composition, with two exceptions: Those from the fourth contain little ash, fiber and nitrogen. Like No. 6 of the purifier tailings they consist largely of endosperm. Those from the second reduction contain much germ, and are therefore richer in nitrogen than the rest.

The repurified middlings, as might be expected, contain much more ash, oil, and fiber than the original, and there is also an increase in nitrogen but not in gluten, owing to the large amount of bran they contain.

Analyses of the three grades of flour as furnished to the market follow. From a cursory glance it might be said that the low grade flour was the best, as it contains the most albuminoids, but its weakness is discovered in the fact that it has only 4 per cent. of gluten. The bakers' flour contains more ash, oil, fiber, albuminoids, and gluten than the patent, but owing to the increased amount of the first three constituents mentioned, it is proportionately lacking in whiteness and lightness. The two flours each have their advantageous points.

Several other grades of flour, break flour, stone flour, and flours from the first, second and third tailings, are all very similar, and, as far as chemical analyses is concerned, good. The preliminary examination has, however, shown certain defects in each. The break flour is richer in albuminoids and gluten than any other, and if it were pure and its physical condition were good it would be of value.

The roller process is distinguished for the completeness with which it removes the germ of the grain during the manufacture of flour by flattening and sifting it out. This furnishes the three by-products which are known as first, second and third germ. They consist of the germ of the wheat mixed with varying proportions of branny and starchy matter, the second being the purest. They all contain much ash, oil, and nitrogen, and if allowed to be ground with the flour blacken it by the presence of the oil and render it very liable to fermentation, owing to the peculiar nitrogenous bodies which it carries.

The flour from the bran dusters is much like that of the tailings, and like the stone stock, from a chemical point of view. This merely shows that chemical evidence should not alone be taken into consideration, for the bran duster flour is a dirty, lumpy by-product, while the stone stocks are valuable middlings. Analyses of the dust from middlings and dust catchers are rather surprising, in that they both contain much gluten and the first one much fiber, but this is due to their containing both bran and endosperm.

To follow the gluten through the process it is necessary to go back to the breaks. The amount in the various chops does not vary greatly. There is an apparent anomaly, however, in the fifth and sixth breaks, where no gluten was found in the feed but much in the chop. This is owing to the fact that the feed has become at this point in the process so branny that by the usual method of washing to obtain the gluten it does not allow of its uniting in a coherent mass and separating from the bran.

Among the middlings, both uncleaned and cleaned, the fourth is the richest in gluten, and the result of the process of cleaning is to increase the amount, although slightly diminishing the nitrogen, which is due to the removal of the branny matter, which, though rich in nitrogen, is poor in gluten.

In the products of the reduction on smooth rolls, the chops from the higher middlings are the richest, and if the analyses of the flours were complete, No. 4 would probably contain more than the lower numbers.

The tailings are, as have been already said, remarkable, not so much that No. 1 has no gluten, but that Nos. 2, 3, 4, have 7.62 per cent., and No. 6 as much as 14.37 per cent. The regular increase shows that the highest numbers must contain a large portion of endosperm.

That this is the case the microscopic examination of the different tailings has certainly shown. No. 1 is found to consist almost entirely of the outer coatings of the grain; Nos. 2, 3 and 4 of the same mixed with a large proportion of endosperm, which is attached thereto, while in No. 6 it is difficult to discover any large amount of anything but flouring material, and the small percentage of ash shows also that it cannot contain much bran.

In a like manner No. 4 tailings from the reductions has 13.34 per cent. of gluten, which is owing to the large proportion of endosperm which it contains, and in this case, too, the fact of the presence of so much of the interior of the berry is presaged by the low percentage of ash. The remaining tailings of this class have little or no gluten, with the exception of No. 1, as they contain very little endosperm.

In connection with the remaining specimens the gluten has been already mentioned, and the results as a whole warrant the conclusion that less of it is wasted in the by-products than would be imagined. For a complete discussion of this point data, which are not at hand in regard to the per cent. of each material produced, are necessary.

The products from Virginia wheat, similar to those which have just been described, present the same but not as wide variations in the breaks and in the flours; the low grade instead of containing less gluten, has more than the bakers' or patent. This may be due to the greater softness of the wheat, in consequence of which it is less suited to the process, a fact which is confirmed to a certain degree by the specimens of flour from Ohio wheat, among which the low grade, although not exceeding the other brands in the amount of gluten, approaches very nearly to them, and it is therefore only reasonable to conclude that the spring wheats are particularly suited for roller milling.

THE MILLING INDUSTRY OF SWITZERLAND.

By E. Ottiker in Die Muehle.

In early times the grain was reduced by crushing, later on by grinding and crushing, and although in the course of ages all forms of machinery have been invented for the purpose, the "principles" of those two methods form the foundation of all. Motive power in ancient times was represented by men and beast; the Romans used wind and water and our present age has substituted steam power, especially where water power is not available.

While in olden times the grain was but superficially cleaned by hand, allowing large quantities of weed and dirt to be ground into the flour, we have now various machines for cleaning purposes, and begin to lay more and more stress upon their careful manipulation. The separation of the digestible from the indigestible particles of the flour was done on a hair sieve, later on by bolting and finally by reels covered with bolting silk. In this slow progress the quality of the flour has improved, and we have to-day "pure flour." Many people claim, however, that the fine flours of to-day are deficient in gluten, and the adherents of this theory manufacture a flour which contains the whole wheat kernel, the so-called graham flour, although it is well demonstrated now that a pure and white flour produces not

only the best tasting, but also the most healthy and digestible bread.

During the time when Switzerland could raise all the cereals necessay for home consumption, a number of small water mills ground the grains of their immediate vicinity, generally for a certain percentage of the grains received. Commercial mills were found only in the larger cities or in such sections of the country where no grain was raised. When the production of cereals became restricted and the importation larger, those mills which were situated in favorable localities, near leading commercial routes, or which possessed an available and large waterpower, added improvements to their outfit and increased their capacity, much to the disadvantage of the smaller mills of which numbers had to shut down altogether. Even as late as 1845 the majority of our larger mills were fitted up after the "German system." One run for the removal of the spelt and the cleaning of the grain, one run for middlings, one for the disintegration, formed the entire machinery, which was generally placed in the basement of the building. The upper story formed the miller's dwelling.

Different varieties of stones were chosen for the different works and the results were sometimes very satisfactory. The motive power was simple; most of the time every run of stones had its own water wheel. Purifying machinery was unknown; that was done by hand, and only the large commercial mills used a cylinder covered with wire for the purpose. The purification of the middlings was done by hand with hair sieves and necessitated skilled labor. Mechanical science was an unknown factor; a good wood worker in company with a blacksmith were fully competent to build a new mill. Of course the results of such milling were not of the highest charater. White flour was obtained in small quantities only and as the separation of the bran particles was incomplete, the ordinary baker's flour had a dark color. The grain was always moistened before grinding.

Besides this "German system"a specifically Swiss invention had gained ground since 1828-29, the "roller system." Its inventors were: Mueller in Luzerne; Helfenberger in Rorchbach, and especially Sulzberger in Frauenfeld, according to whose system one mill was fitted up in Frauenfeld, and a steam mill in Venice, Budapest and Prag each. The success was not as great as anticipated, because the wheat ground was too soft and the rollers did not last and became useless. About 1847–48 the machinery establishment St. George produced a roller made of the best and hardest steel; this was an improvement; the roller could be sharpened by means of chisels and produced a superior grade of middlings, but its introduction was limited to a number of mills in Eastern Switzerland.

During 1851–2–3 a decided change was inaugurated in the Swiss milling industry by the introduction of the "French system." This permitted the production of a finer and whiter, and as the necessity for the moistening of the grain had disappeared, of a drier flour. Even the hardest wheat could be ground without the accustomed copious moistening. Flour thus produced was readily recognized by the bakers and found a quick sale, demonstrating to the milling fraternity the necessity for the introduction of the new system. But in spite of this very apparent advantage the transformation of the mills in Eastern Switzerland was exceedingly slow and not completed in many places until 1873–74. Simultaneous with the improved milling system, we find the introduction of improved machinery for grain cleaning and of the semolina and flour reels. This was the time when the Swiss milling industry was able to compete with the foreign markets in the line of outfits at least. During the same period the roller system had made large progress, and had almost been able to drive stone milling out of the industry. Its invention was due to Switzerland and its future development was largely aided by Swiss inventors. Swiss millwrights in Budapest inaugurated the "grooving" of the chilled cast rollers, and Mr. Wegman of Zuerich constructed an excellent mill with porcelain rollers. Both systems ensure at least as large a percentage from the raw product as the stone milling, while they give a much larger percentage of finer, whiter and purer flour than the old system.

The Swiss milling industry was very conservative against the improved process in the beginning. This was to be expected, for the question of expenses entered largely into the calculation; but as soon as some of the larger establishments had introduced the roller system with great success, others, unable to bear their competition, had to follow or close their mills, and the transformation was accomplished within a few years all through Switzerland. While this change was advantageous to the consumer, it entailed many disadvantages on those who had to pay the expenses incidental to the necessary change. Milling became more complicated and more expensive, the majority of mills had increased their capacity and there ensued such an over-production, such a flooding of the markets with flour that the prices decreased to a figure which barely paid the expenses. The fact is that the present Swiss milling industry is capable of providing for the wants of 5,000,000 people without difficulty. Austria-Hungary, which has always looked upon Switzerland as a market for their surplus flours, was not inclined to regard the development of the Swiss milling industry with favor and tried all possible, legitimate as well as illegitimate, ways and means, to retain the convenient market. So far these attempts have been failures but it is difficult to decide how much longer the millers of Switzerland can carry on the fight under their present disadvantageous situation. All that they ask is to have the same privileges on the home markets as foreigners have.

Production and import of the cereals of Switzerland amount to 4,500,000 metercentner per annum. Expenses connected therewith, calculated at 3 frcs. per mtc. gives the sum of about 14,000,000 francs, divided as follows; 9,000,000 francs for wages, repairs, interests on capital and the support of a large number of families; 5,000,000 francs for the interests on real estate. The latter sum would represent a value of 100,000,000 francs capital invested in the milling industry of Switzerland; a very low estimate in view of the immense sums which have been used in the improvements of the mills during the last few years.

A TREATISE ON FLOUR.

III.

The following notes may be found useful in the determination of the gluten obtained by washing: After a gentle washing, of longer or shorter duration, we obtain an almost constant quantity of gluten. If derived from hard wheat it loses less by repeated washing than if derived from soft wheat, so that the average loss of the former amounts to five, that of the latter to seven per cent.

The gluten washed from a dough three hours old loses more than that from a dough freshly made. This difference amounts at times to from 2 to 3 per cent. for hard wheat flour, and to from 4 to 6 per cent. for that from soft wheat. In well bolted flours the loss is smaller than in flour poorly bolted.

Gluten, when washed from a flour that has been immersed in water for 24 hours, has lost on an average 10 per cent; if the flour was old the loss may amount to 20 per cent or more. Several interesting observations have been made during the drying of the gluten. It has a tendency to absorb water in varying quantities, and the absorbing power is larger in soft wheat gluten than in that obtained from hard wheat.

a). 100 grammes flour of Indian hard wheat produced in two tests the following quantity of gluten:

Moist.	Absolute.		Per cent.	
	Dry.	Moisture.	Dry.	Moisture.
36.8 grammes.....	13.00	23.80	35.33	64.68
36.4 "	12.30	24.10	33.79	66.21

b). 100 grammes flour of American soft wheat produced in two tests the following quantity of gluten:

Moist.	Absolute.		Per cent.	
	Dry.	Moisture.	Dry.	Moisture.
31.30 grammes.....	10.25	21 05	32.75	67.25
31.50 "	10.20	21.30	32.38	67.62

The quantity of moisture in gluten, obtained from the same flour, will vary with the time that has elapsed since the preparation of the dough. The older the dough the softer the gluten.

a). 100 grammes flour of Indian hard wheat gave 39 gramme of gluten directly after the preparation of the dough, and 48 gramme after a lapse of two hours. Dried first in the air and then in an oven the following weights were obtained:

Dry gluten.....	16.90	43.83	17.90	40.68
Water.....	22.10	56.67	26.10	59.32
	39.00	100.00	44.00	100.00

b). Another sample of 100 grammes taken from a different sack gave under the same conditions 35 and 37.8 grammes of gluten, as follows:

Dry gluten.....	12.40	35.45	13.00	34.39
Water.....	22.60	64.58	24.80	65.61
	35.00	100.00	37.80	100.00

c). 100 grammes of soft wheat flour gave 31.8 and 24.2 grammes of gluten, as follows:

Dry gluten.....	11 00	34.59	11 20	32.94
Water.....	20.80	65.41	23.00	67.06
	31.80	100.00	34.20	100.00

The capacity of the gluten for the absorbtion of water changes with the age of flour. From a flour, produced nine months ago from American soft wheat, two samples of dough were made of 100 grammes flour each. From the one the gluten was washed immediately, resulting in 23.6 grammes of moist gluten, while the second sample, after two hours of rest, yielded 27 grammes. After drying the following quantities were obtained:

Dry gluten.....	9.60	40.67	10.60	39.25
Water	14.00	59.33	16.40	60.75
	23.60	100.00	27.00	100.00

A few more experiments were made in connection with the gluten's capacity for absorbing water. A certain quantity of moist gluten dissolved in weak acetic acid, when mixed with a saturated solution of carbonate of soda in water and rewashed immediately, will increase in weight when washed again in water.

ABOUT OATS.

It has long been a puzzle to those who have given thought to the matter, says the Boston Globe, how it comes to pass that a grain like the average oat, weighing little more than thirty pounds to the bushel, three-quarters of that being hulls commonly supposed to be no better if as good as hay, should sell for about as much as or more than an equal weight of Indian corn, which, having little hull, gives nearly its full weight in meal. It is no doubt true that oatmeal, pound for pound, is more nutritive than corn meal, or even wheat meal, but the difference is nowhere near so great as the difference in the weight of meal which they severally yield. At the same time nobody believes that oats, or anything else, will during scores of years command a price much beyond its real worth, as determined by experience. This same experience has also shown that oats are preferred for traveling horses, while corn finds favor for slower working animals.

Some light has recently fallen on this puzzle. Scientific investigations claim to have lately shown that there exists in the pericarp or outer covering of the oat an amorphous vegetable alkaloid stimulating in its effects, just as the crystalline alkaloid quinine, which is obtained from Peruvian bark, is tonic, or the alkaloid morphine contained in opium is saporific. This newly discovered substance is called avenin, from the botanical name of the oat plant, Avena sativa. Its effect is stated to be chiefly upon the motor ganglia, that is to say, upon the centres from which proceed the nerves of motion. If this be as stated, it is easy to understand how it is that the oat has maintained the position given to it by experience, as well as why it is preferred for the quick stepping horse rather than for the slower ox. It was, doubtless, a more or less obscure perception of the underlying fact that gave origin to the comparison sometimes heard at a cross-roads grocery between "long oats" and "short oats," meaning by the former the whiplash.

It may be added that avenin is insoluble in water, and requires alcohol for its extraction; also that grinding the grain appears to cause a change in its proportions, rendering it quicker in operation, but weaker, and more transient in its effects; also that white oats contain more than black. Several new remedies have lately appeared, purporting to be extracts or concentrated tinctures of oat, which are understood to have found considerable acceptance with medical men, and which probably owe their efficacy to a larger or smaller content of alkaloid. What its permanent place as a medicine may be remains to be seen.

THE DEPRESSION IN WHEAT.

It is argued by some writers that because the English farmer, in selling his wheat at present prices, is making a serious loss on the cost of production on the basis of existing rent, taxes, etc., he will abandon wheat raising—but this does not seem sure to result. It will more likely lead to a readjustment of affairs between the farmer and the landlord, by which the rent and other items of cost must be reduced, says the Cincinnati Price Current. Of course the farmer can not do a losing business continuously, but it would be poor policy to wholly abandon any industry which in the average of years has brought a fair or satisfactory return, because a period of exceptionally low prices has been reached, by which all profit for the time being is wiped out.

The present year is one of bountiful crops, nearly everywhere. Were it not for undue speculation these crops would move into consumption at fair prices, so that the producer would get some remuneration for his labor on products disposed of, while being obliged to carry along the surplus stocks until requirements caught up to the supply.

Speculation at times helps prices of products above a natural relation to other commodities, but when the current exhibits of supplies show an excess over ordinary resources and needs, the tendency is to operate for low values, and an undue depression results. This is the situation now in the wheat markets, and current values give no remuneration to the producer, and in most cases, where rent of land, or its equivalent in interest account to the farmer who tills his own land, is to be taken into account, the actual cost of the product is not covered by the selling price.

When this condition of affairs is reached, the tendency is to curtailment of production; farmers who can readily turn a portion of their wheat lands to crops giving promise of better results, will do so; this will help on the readjustment of affairs by which consuming needs will overtake the supply.

In the natural order of things, the cost of labor and investment regulates, at least approximately, the relation between prices of commodities. In the matter of products of the soil, the variable conditions of the seasons are governing influences: But the

farmer who is accustomed to receive a dollar a bushel for his wheat, and now is brought down to sixty or seventy cents, has some compensation in this shrinkage by the general reduction in cost of such commodities as he purchases, prices of which have been more or less reduced by the general adjustment of values to a low point. Therefore the farmer is not so severe a sufferer as on the face of the exhibit he is led to believe.

With improved labor-saving appliances a large proportion of the articles of consumption and use are brought into existence at a much less cost of labor than formerly, by which means there is an undue accumulation of these products—which is called over-production. The manufacturer whose wares are thus cheapened to a point below original cost is a sufferer in the same manner that the farmer is by the depression in prices of his products. The relief to the manufacturer is a widening of the field of distribution of his goods and an increased demand for them because of their cheapened cost.

In the present wide-spread depression in industries, a portion of the misfortune is due to illy-advised actions of trades-unions, by which manufacturers are prevented from modifying the cost of production when it is necessary to do so to prevent serious losses on manufactures or by stoppage of work, in which latter case the laboring man is deprived of opportunity for earning enough to meet his living requirements, and a disordered state of affairs is promoted.

There are many phases to the question of low prices. Not only does the grower of wheat and the manufacturer find periods of losses, but the jobber of hardware and dry goods and other staple products, who is obliged to carry more or less heavy stocks, is at times similarly overtaken. But in these cases, as a rule, the jobber does not jump out of his line of business into another one, for he knows that sooner or later there must be a day when profits must be realized.

The wheat product of the present year is not seriously excessive, and the surplus will not more than make good a possible deficiency from a single crop to follow, under adverse seasons. Therefore it is not wisdom to greatly curtail the production of this cereal at this juncture, nor to expect that there can be "no good" in wheat until production is materially diminished.

FLOORS FOR SUSTAINING WEIGHT.

The designer of a certain warehouse in Germany, unable to find definite data of the resistance of floors, resolved to make some trials for his own information, and incidentally, for that of his professional brethren. The warehouse was of immense size, covering nearly an acre of ground, and was intended for the storage, among other things of heavy pieces of metal, the handling of which often involved considerable shocks to the floors. The whole building was fire-proof, part of the flooring being of brick arches in cement between iron beams, and part of concrete slabs supported in the same way. Five trial floor arches were built, each forty-four inches in span, of which the first consisted of concrete, made with one part Portland cement to five parts of gravel, while the second was of hard bricks in Portland cement mixed with three parts of sand, and was covered with a coat of asphalt three-quarters of an inch thick; the third was of softer brick, in mortar, containing one-half as much lime as cement, and four parts sand; the fourth was of the same brick, in equal parts of lime and cement, and five parts sand; and the fifth was of the same brick, in cement alone, mixed with four parts sand. These last floors were finished with a coat of cement, three-quarters of an inch thick or more. Fifty-four days after their completion, each floor was loaded with pig-iron to the amount of 200 pounds to the square foot. This weight had no effect, and two days later the concrete arch was tested by letting fall upon it an iron ball of 60 pounds weight. This, dropped from a height of five feet, did no harm, and another ball, of 135 pounds weight, was let fall from the same height. The first blow produced no effect, but by dropping the ball repeatedly on the same spot a crack was started at the fourth blow, and the eighth broke a hole entirely through the floor, the opening being four inches in diameter at the top and twenty-four inches at the under side.

Thirty days later the same test was applied to another part of the floor, and a hole of the same size and shape was broken through at the ninth blow of the ball. The thickness of concrete in the middle of the span was four inches. Trials were made with the brick floors in the same way. The first, of hard brick in strong cement mortar, stood forty-eight blows of the heavy ball before it was pierced; the second, of softer brick, with lime added to the mortar, gave way at the tenth blow; the third, at the seventh blow; and the last, of soft brick in sandy cement mortar, without lime, at the tenth. In all these cases the hole broken through was much larger at the intrados than at the extrados. A new floor was then built of soft brick, in mortar made with two parts lime to three of cement, and ten of sand, and covered with a layer of concrete, of equal pars of cement and sand, two inches thick. After this had set, the floor required seventy-one blows of the 135 pounds weight to break it through. This protective effect of the thick layer of concrete over bricks is very curious, but aside from this, the result of the test was decidedly in favor of the brick arching.

THE WHEAT QUESTION AND POLITICAL ECONOMY.

If the wheat lands of the West—the best in the world—are not used for raising wheat, to what use shall they be put? No one answers this query satisfactorily. It is easy enough to advise a reduction of wheat acreage for next year, but how shall the farmer make his land more profitable than by wheat raising? He can not seek relief in corn, since there is an "over-production" of that cereal as well as of wheat this year. Stock-raising promises well for a change. But that needs special experience and large outlays, and the stock raiser runs the risk of losses from pleuro-pneumonia, which at any time may invade the most carefully guarded herds. Besides, if every wheat raiser of the West goes into the stock raising business, there will soon be an "over-production" in that line also. Then the farmers who made the change will have occasion to regret it. These points are worth considering.

That political economy is spurious and false which seeks to regulate all these matters instead of leaving them to regulate themselves. If a certain tract of land can produce a larger and surer crop of wheat than of anything else, year after year, it is a mistake to divert it from that use under any inducement whatever. The fatal error of our protection friends lies just here. They are always seeking to foster the production of things which are not spontaneous and natural growths. They take no interest in industries which are self-developing and self-sustaining. All their thoughts are given to the encouragement of industries which are alien to our soil and climate and cannot exist outside of a hot house. Native tea, sorghum, sugar and the silk culture are examples of the class. These theories never let well enough alone. It is the spirit of protection which is at this time lending delusive force to the advice of these Western editors to abandon or restrict wheat culture in the best wheat zone on this planet. As if it were possible to put the wheat belt of the United States to a better use than that for which nature expressly fitted it. If wheat cannot be grown at a fair profit under such extraordinary conditions, the fault is not in "over-production," but in the folly and extravagance of the growers. Let them not restrict their acreage, but their expenses—let them adopt the general rule of selling their wheat at the market price, instead of holding it for some ideal price which never comes—and the Western wheat raisers will always have as good a prospect of making a living as persons in any other lines of business.—N. Y. Journal of Commerce.

HOW NEW SORTS ORIGINATE.

Dr. Sturtevant, the director of the New York Agricultural Experimental Station, has been testing barley in reference to variation of sorts, and gives his conclusions as follows: We have had an interesting experience this year with the changes that may arise through the use of hybridized seed. In April last, Mr. Horsford, a hybridizer and seed-grower of Vermont, sent us one head of a cross-bred awnless barley, which shelled out twenty-eight seeds. On May 1 these seeds were planted in order as taken from the head, single kernels, six inches apart in the row, and two feet from other rows. Of these, twenty-six seeds vegetated and gave crop. August 30 the crop was harvested, and was found to consist of just four distinct kinds of grain. The original head, sent as a cross-bred for trial, be it understood, answered to the description of Hordeum trifurcatum, "remarkable for its beardless ear; in the place of beards the glumes carry on their summit a short tongue with three teeth. The leaves are large, the stalks thick, and the grain naked. * * * It appears to have come originally from Nepaul; at least it was first introduced under the name of Nepaul Barley." Bon Jardinier, 1882. The seed is black. Summarizing the results, and giving the yield in dry grain, we have:

	Seeds.	Hds.	Av'ge Hds. to Seeds.	Yield in Ozs.	Yield per Plt. in Grain.
Not bearded, black	13	189	14.5	7.43	250
Bearded black	6	90	15.0	4.63	337
Not bearded, white	5	82	16.4	3.25	285
Bearded, white	2	29	14.5	1.66	364
Total	26	390	15.0	16.97 1.06 lbs.	286

The first reflection we have to make is upon the ease with which a good variety can be increased, even were we have but a single head to work from. The yield in the case above is at the rate of a bushel of grain per 45 1-3 heads, or a bushel from 1776 kernels planted; or placing it in another form, three seeds planted furnishes enough seed for a bushel of succeeding crop.

We must note also the effect of the hybridization from which the original head planted was the outcome. We have a crop of four distinct varieties of grain, between which there are no intermediate forms or colors. We have as a total 18 beardless and 8 bearded plants, or 271 beardless and 119 bearded heads. We thus see that a cross does not necessarily mean evenness of potency upon the part of the parents, and when we consider that there were produced four distinct varieties, we must consider that either more than one cross was included in the seed, or else that the effect of the crossing was to bring atavism into play, and to discover several crossings of the past.

This seed just grown will be carefully kept separate, and planted next year, each variety by itself, in order to follow the outcome still farther in a statistical manner.

SPECIAL ADVERTISEMENTS.

Advertisements of ***Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange,*** *etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or $1 for four insertions.* ***Cash must accompany the order.*** *When replies are ordered sent care of this office, 10 cents must be added to pay postage.*

SITUATIONS WANTED.

Advertisements under this head, *25 cents each insertion for 25 words, and 1½ cents for each additional word.* ***Cash with order.*** *Three consecutive insertions will be given for the price of two.*

SITUATION WANTED.

A married man, who can furnish recommendations from burr and roller millers, wants a situation. Will guarantee satisfaction as to work. Am not out of employment, but wish to change on account of poor water. Am advised by doctors to change my location. J. JERABEK, Hardinsburg, Breckenridge County, Ky. 262

The MILLING WORLD and CHRONICLE of the GRAIN and FLOUR TRADE.

PUBLISHED EVERY THURSDAY BY

THE AMERICAN INDUSTRY PRESS
(LIMITED.)

OFFICES, LEWIS BLOCK, SWAN STREET,
BUFFALO, N. Y.

G. B. DOUGLAS, - - Managing Editor.
THOS. MCFAUL, - - General Agent.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, $1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at *sender's risk.*

To all Foreign Countries embraced in the General Postal Union, $2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or he grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

MILLERS' ASSOCIATIONS.

NATIONAL.....	S. H. Seamans, Sec'y.	Milwaukee, Wis.
CALIFORNIA....	F. J. Parsons, Sec'y....	Oakland.
ILLINOIS.....	C. H. Seybt, Sec'y.. ..	Highland.
INDIANA.....	Jos. F. Gent, Pres't	Columbus.
IOWA.....	J. S. Lord, Sec'y	Ogden.
KANSAS.....	O. W. Baldwin, Sec'y..	Ottawa.
KENTUCKY	W. H. Wherritt, Sec'y..	Lancaster.
MARYLAND	J. Olney Norris, Sec'y..	Baltimore.
MICHIGAN.....	W. Hibbard, Sec'y.....	Grand Rapids.
MINNESOTA....	Frank Pettit, Sec'y.....	Minneapolis.
MISSOURI.....	David B. Kirk, Sec'y ...	St. Louis.
NEBRASKA.....	C. D. Smith, Sec'y.....	Lincoln.
WISCONSIN	S. H. Seamans, Sec'y...	Milwaukee.
TEXAS	Mitch. Gray, Sec'y.....	Dallas.
PENNSYLVANIA.	Landis Levan, Sec'y....	Lancaster.
OHIO.....	Robt. Colton, Sec'y	Bellefontaine.
NEW YORK....	J. A. Hinds, Sec'y.....	Rochester.

OUR CLUBBING LIST.

NOTE—***You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.***

Take these for Yourself.

THE MILLING WORLD, per year.....		$1.50
WITH		
The Builder and Woodworker..	($1.00 per year)	2.00
American Architect, weekly....	(6.00 " ")	6.50
American Architect, monthly...	(1.75 " ")	2.75
American Machinist	(2.50 " ")	3.50
Mechanical Engineer..	(2.00 " ")	3.00
American Agriculturist.....	(1.50 " ")	2.50
The Country Gentleman.....	(2.50 " ")	3.50

Take these for your Family.

THE MILLING WORLD, per year.....		$1.50
WITH		
Harper's Magazine.....	($4.00 per year)	4.50
Harper's Weekly.....	(4.00 " ")	4.70
Harper's Bazar.....	(4.00 " ")	4.70
The Century.....	(4.00 " ")	4.50
Frank Leslie's Illus. Newspaper.	(4.00 " ")	4.50
Frank Leslie's Popular Monthly.	(2.50 " ")	3.50

Take these for your Children.

THE MILLING WORLD, per year.....		$1.50
WITH		
St. Nicholas.....	($3.00 per year)	4.00
Harper's Young People..... ...	(2.00 " ")	3.00

MESSRS. WOLF & HAMAKER, of Allentown, Pa., have just completed arrangements by which they have acquired the sole right to manufacture and sell the "Keiser turbine," and will succeed the Keiser Machine Co. Mr. Keiser will accompany Messrs. Wolf & Hamaker to Chambersburg, at which place their new works are located which they intend to occupy by December 1.

HAS it ever occurred to any one to find out how many, from a large number of, first class housekeepers and cooks know anything of the science of bread-making? Of course, they all know that a certain quantity of yeast of some kind, or baking powder, will cause the dough to "rise," but the reason why it should do so, is not so well understood. In a kind of indefinite way they know that the yeast is necessary, and that it exerts some action, but—try for yourself and find out what the answer will be to the question, "What causes bread to 'rise?'"

THE British parliament is said to have concluded that an obligatory introduction of the metric system is necessary for a better supervision of their commercial relations with the European continent. So far the proposed change will affect Great Britain only, and allow the colonies to retain their old system of weights and measures. If a law to that effect is passed there will be 21 States with a population of about 420,000,000, using the metric system, and after England has adopted it, the United States, too, may feel the necessity for a unification of weights and measures in correspondence with that of other civilized nations.

FRANCE, which has always been considered the most prosperous country of Europe, appears to be on a down grade now. The industrial conditions are more hopeless than ever, and the government finds itself unable to make the necessary appropriations for the constantly increasing deficit of their treasury; the financial embarrassment has even progressed to such an extent that the sale of the government railroads is seriously contemplated, if they can be disposed of at a reasonable figure. Verily, the United States, with millions of surplus in the National treasury, leads the world, in more than one way.

SPEAKING about fire extinguishing apparatuses, it is well to keep posted as to their relative merits when reports can be obtained from independent sources. Like every other valuable article, something that is really good in this line, is quickly copied or imitated, and as every one is supposed to be the very best and only reliable one, according to advertisements, it is not always an easy matter to form a correct opinion. The latest fire extinguishers are the so-called "hand grenades," and their relative merit has recently been examined by the New England Insurance Exchange, which reports on them as follows: The "Harden hand grenade," in the hands of persons trained to use them, are valuable auxiliary fire appliances in the incipient stages of a fire, especially chemical fires, but we doubt if the appliance should receive the formal approval of this exchange for general miscellaneous public use. The "Hayward hand grenade" is less effective than the "Harden," and from our present knowledge of it, we do not believe that it is entitled to the recognition of this exchaange as a useful fire appliance. In view of the "boom" which these hand grenades have had of late, it is well to know of their relative merits from independent sources, in reference to the statements of the manufacturers of the article.

THE fire losses during the month of October, as compiled by the Commercial Bulletin, give the immense sum of $348,000, as representing the amount of property destroyed in flour mill and grain elevators. As the table reports only the losses above $10,000, the actual destruction of property will exceed the above named sum considerably, but even as it is, it is large enough to supply food for reflection. The number of large fires has been greater during the past month than in any previous month, and if November and December exhibit as large figures as the rest of the year did, 1884 will end with a larger destruction of property by fire than any ordinary year has done before. "There is no room for any new comment on this increasing fire waste," says the Bulletin. "A duty devolves, however, upon the press to keep the matter before the public, and by constant agitation and argument to hold up the mirror to popular recklessness and folly. It is time that the press of the whole country took hold of the subject, with an earnest appreciation of its gravity and with the determination to make evident the fact that popular carelessness in this matter of fire waste is nothing less than a high crime against the progress and prosperity of the nation itself, a crime, moreover, for which every careless individual must be held morally responsible. For of what avail is a national prosperity so long as a minority of reckless individuals are permitted thus to discount the national wealth year by year to the amount of over $100,00,000 per annum.

HOW many of our patrons will exhibit at the forthcoming New Orleans Exhibition? It appears that the managers are doing everything in their power to ensure an unprecedented success; foreign countries will be represented on a larger scale than at the Centennial at Philadelphia and exhibitors of American flouring mill machinery and its products will have the best of all opportunities to receive recognition not only at home, but also from abroad. Many countries will have representatives, to whom roller milling is practically an unknown process, and the exhibit of a modern mill with all its improvements, side by side with an exhibition of the difference in the flour produced by the old, as well as by the new system, cannot fail to make a most favorable impression. In addition to this possibility of entering into new business connections, such an exhibition partakes of the character of a competitive school Exhibits of various systems placed side by side, will reveal some few or more imperfections in the one or in the other, suggesting thoughts for improvement in the minds of their designers with the result that the machinery will be more and more perfected as time progresses. The time when every improvement had to be kept a profound secret, has happily passed since our patent laws offer their protection to the inventors and, at the present international exhibitions are the most efficient means to demonstrate the superiority of one country over others in particular lines of industry. And we would be glad to know beforehand to what extent millwrights and millers will be represented at New Orleans the coming winter.

WHEN trade is in a flourishing condition, almost everybody appears to be satisfied and little, if any time is devoted to the extension of commercial routes. During times of depression, however, these things change; then the necessity for the opening of new markets for the American products is felt and efforts are made to introduce them into countries hitherto ignored; markets which were considered as of no importance during commercial activity, loom up as very desirable centers for the distribution of our surplus. Thus far, the different countries of South America have received but little attention from those interested in the commerce of the United States, and although they are our next door neighbors, European countries have largely taken the trade from these States, a trade which could have been secured to the United States with ease. German and English firms have long ago established agencies in the principal seaport towns of South America, and have succeeded in establishing direct commercial relations, which the United States, strong in their knowledge of immense home commerce, have neglected. Now it begins to be acknowledged that a country which consumes the largest percentage of its own products, is not by any means in the most prosperous condition during times of commercial depression, because the smallest reduction in the purchasing power of the inhabitants, will react enormously on the existing state of trade, and the cry of overproduction is heard everywhere, meaning as we all know "under-consumption." Then the question arises what to do with the excess. The accustomed markets are all overstocked, none of the regular customers care to purchase, and so the necessity for new outlets, for markets in which our products are needed, becomes more and more apparent. A move in the proper direction has at last been made by the appointment of a commission by the United States Congress, to visit Mexico and the other countries of Central and South America, for the benefit of our commerce. The commissioners are supposed to collect the views of the leading business men and of the government officials of the countries visited with the ultimate view of procuring commercial treaties as advantageous as possible to the home interests. Let us hope that the labors of this commission will be crowned with success and that the commercial relations to be established between the different nations of the American continent will prove advantageous to all.

AT this writing considerable uncertainty exists as to the result of the election last week, with a growing disposition to admit the success of the Democratic presidential nominee. It is the impression in many quarters that Democratic success will be followed by still greater depression in industrial pursuits than now exists, although, upon what this impression is founded it would perhaps be extremely difficult to determine. The Democratic party has been styled, erroneously however, the party of free trade. The record of the representatives of this party in Congress, during the past few years, shows this charge to be without stable foundation. Indeed were it possible to secure a free expression of the opinions of representative men of both Republican and Democratic parties the number which favor absolute free trade could almost be counted upon one's fingers. Neither party believes in free trade; men of both parties favor modifications in our tariff system. Will modifications be made? In all probability some will be, but the process of modification will be slow, as the mass of the people, having been falsely educated by professional politicians, will be reluctant to sanction anything which has the appearance of extremity. Free trade in the United States is something which few of those who read this paragraph will live to see. The possibility of some modifications in our tariff duties should have no influence upon our business interests. If any are made they will prove beneficial instead of harmful. The surplus money in the U. S. Treasury in excess of requirements is hurtful to the business interests of the country. If it could be used toward the cancelation of our public debt, it would serve a useful purpose, but money tied up, and withdrawn from circulation is detrimental to the country's prosperity, At this time seemingly nothing is wanting but popular confidence to inaugurate better business conditions. Let us divest ourselves of the idea that the success of one or the other political party will make or break the country and all will be well. Politics is a business in which if a man is successful he gaineth glory and lucre, and he who manipulates public opinion best is most successful, but at the same time the people are the rulers, and when occasion arises they can readily exert their power. At the present writing "the country is safe," and no fears for its entire recovery need be entertained, whether Blaine or Cleveland gets the White House rent free for the coming four years. All we have to do now is to "brace up."

NEW INVENTIONS

IN MILLING APPLIANCES.

APPARATUS FOR THE GRADUAL REDUCTION OF GRAIN.

Letters Patent No. 307,386, dated October 28, 1884, to Patrick Gillen, of London, county of Middlesex, England. This invention relates to improvements in roller-mills and other mills for reducing grain in which the meal is passed from one pair of rolls or grinding apparatus through a reel or dresser to another pair of rolls, and so on from one series to another, the objects of the improvements being to combine several sets in a comparatively small space, and in such a manner that the parts shall be easy of access and of removal when required. Figure 1 is a section through the two pairs of rolls and silk dresser; Fig. 2, an end view of same, partly in section. Fig. 3 is a vertical section of the elevator. Figs. 4, 6, and 8 are detail views of parts of said elevator, and Figs. 5, 7, and 9 respective sections thereof. A indicates one pair of rolls; B, a second pair. D is a cylinder or reel of silk, wire-gauze, or other suitable screening material. E is a circular elevator, which may be a ring or circle of any suitable material, having formed in or on its periphery recesses, cups, or concave compartments F, the open sides or faces of which revolve almost in contact with the periphery of the fixed disk or drum G, which keeps the contents of the cups F from escaping until required. The construction of the elevator E is shown in detail in Figs. 3 to 9. At Figs. 3, 4, and 7 it will be seen that the fixed disk G has a recess or cavity, G′, in which the meal collects, and also an opening or hopper, G^2, into which the meal is discharged from the cups F. H is a hopper leading into rolls A; I, hopper leading from rolls A; K, a worm or creeper conveying meal into reel D; L, hopper leading from the opening G^2 of the fixed disk G to the rolls B. The mill being at work, the mill fed into H enters the rolls A, passes thence through I to the worm K, by which it is conveyed to the reel D, where it undergoes a first sifting and separation, the fine flour and middlings passing through the silk, and the remainder of the meal traveling to the opposite end of the reel, where it passes into the collector G′ of the fixed disk G, from whence it falls into the cups F of the elevator E, which carries it up and delivers it through the opening G^2 into the hopper L, from whence it passes into the second pair of rolls, B, and so on from one set of rolls and reels to another throughout the mill.

Fig. 1

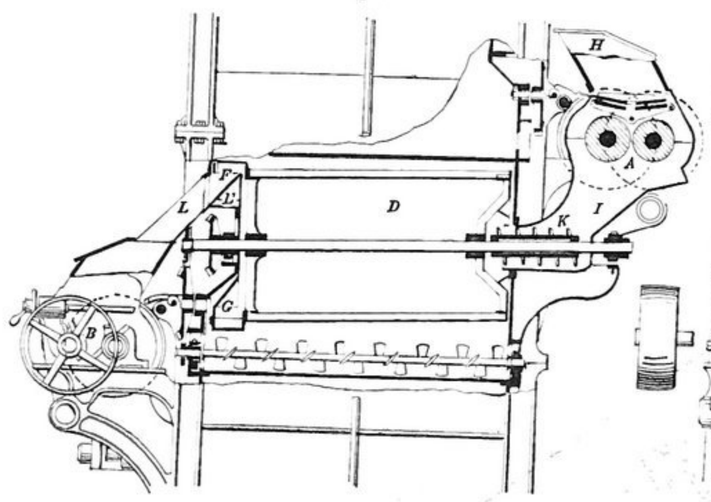


Fig. 2

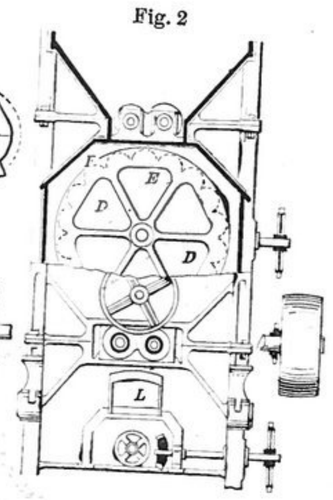


Fig. 6

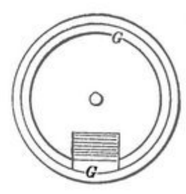


Fig. 7

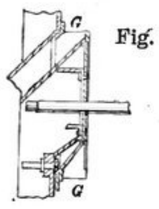


Fig. 3

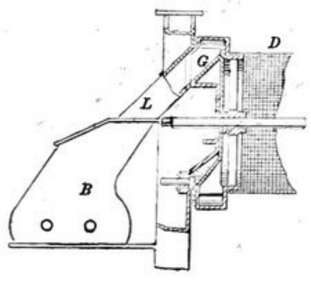


Fig. 4

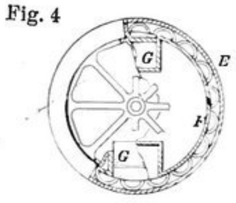


Fig. 8

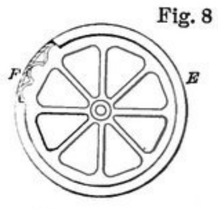


Fig. 9

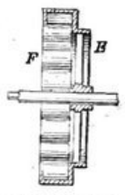
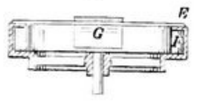


Fig. 5

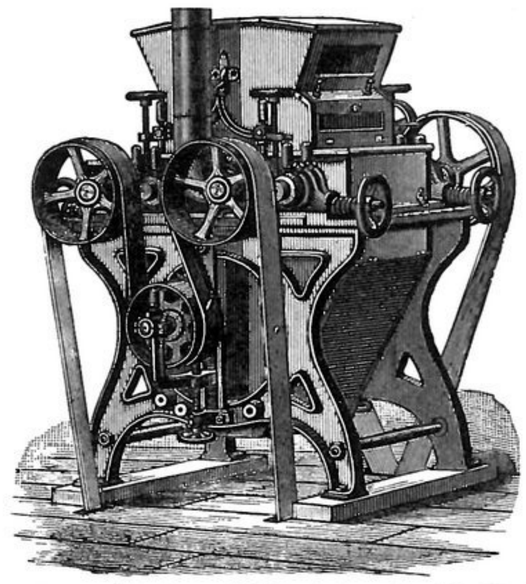


PATENT NO. 307,386. APPARATUS FOR THE GRADUAL REDUCTION OF GRAIN.

METHOD OF APPLYING BINDING TO THE EDGES OF BOLTING-CLOTH AND SIMILAR FABRICS.

Letters Patent No. 307,091, dated Oct. 28, 1884, to Silas O. Brigham, of New York, N. Y. This invention relates to bolting-cloth—such, for example, as that used in shaking-bolts—and composed of silk or wire or other suitable material; but the invention may also be applied in attaching bindings to the edge of fabrics for other purposes—as, for example, shaking-sieves, purifiers, &c. It is an improvement upon the method set forth and described in Letters Patent dated October 3, 1882, No. 265,302, and its object is to enable the binding, the cementing material, and the edges of the fabric to be held permanently and uniformly connected or united together, inasmuch as a flat pressure extending over a comparatively large surface and continued during an appreciable length of time secures these results with a nearer approach to perfection than when the said parts are pressed together between rollers, which at any one time subjects but a narrow portion of the surface to compression. The bolting fabric—in other words, the sifting fabric—may be silk or ordinary bolting-cloth, or preferably of wire-cloth of suitable mesh or character of wire. This cloth or fabric, whatever its character, may be made in pieces or strips of any suitable length, and when the same is to be applied to a bolting-reel should be of such width that one of its longitudinal edges will rest upon one of the ribs of the reel, while the opposite logitudinal edge rests upon one of the adjacent ribs, and so on. Each longitudinal edge, has placed upon each side a longitudinal strip of sheet india rubber. These strips may, when desired, be made in one piece, folded so that one portion is above and the other below the fabric. Placed over the strips of india-rubber—that is to say, upon the external surface of the india-rubber strips—is a piece of cloth which may be folded around the edge. This cloth is preferably that commonly known as "ticking;" but any other cloth of suitable strength and flexibility may be used. The parts being arranged as set forth, are pressed between heated flat surfaces under conditions which subject the india-rubber to the action of heat as well as pressure, the result being that the two strips of india-rubber have their inner surfaces firmly cemented together through the interstices of the fabric, while each individual thread or wire of the latter is embedded in and firmly retained by the india-rubber embedded thereon, the fabric being simultaneously firmly cemented to the outer surface of the india-rubber by the combined action of the heat and pressure. Each piece or length of the fabric, having its two opposite edges provided with the india-rubber and cloth, may be readily attached to the ribs of the reel by tacks driven through the india-rubber and cloth, or, when desired, by sewing the two contiguous edges of adjoining strips or pieces together. Inasmuch as all the transverse threads or wires of the fabric are firmly embedded separately and collectively in the india-rubber, it follows that there is no inequality of strain upon said threads or wires. There is no such direct contact of the fabric with the ribs as would cause unequal working or wearing of the fabric or any of its threads or wires, and a perfectly flexible but strong and uniform connection of all the edges of each piece or length of the sifting fabric to the ribs of the reel is secured In the manufacture of the article aforesaid the edges provided with india-rubber cloth are placed between the bed and platen of a press 1. The said bed and platen should be heated to such a degree as will effectually soften the india-rubber or cementing material without dissipating the same or impairing the adhesive properties thereof. Such heating of the bed and platen may be most effectually accomplished by having the same made hollow, and by supplying the internal chambers of said bed and platen with steam through pipes or in any other suitable manner. The platen should be worked up and down, as occasion requires. The fabric with its longitudinal strips of india-rubber or cementing material, and its binding-pieces are placed upon the bed and beneath the platen, whereupon the latter is caused to descend with any requisite degree of pressure to compress the binding-cloth upon the cloth or fabric with the india-rubber or cementing material interposed between the binding-cloth and the cloth or fabric. It will be seen that those portions of the said parts compressed between the platen and the bed aforesaid are subjected to a "flat pressure"—that is to say, a pressure substantially uniform throughout the extent of surface—between the platen and the bed, and which may be maintained for any requisite length of time, so that the permanent introduction of the cementing material, be it rubber or some other suitable substance, into the interstices of the fabric is secured, thereby producing a very much more effective and reliable mode of attachment of the binding-cloths to the cloth than would be feasible by passing the same between rollers, which latter, by exerting only a momentary pressure upon any portion of the said parts, does not insure that uniform, firm, and complete adhesion of the parts which is necessary to insure the best results in practice. When one portion of the fabric with its india-rubber or cementing material and binding-cloths has been subjected to the action of the press aforesaid for a sufficient length of time, the pressure is released and the next adjacent part is brought forward in its place into the press and in its turn subjected to the action of the latter, and so on until the binding-cloth has been attached to the fabric. When preferred, the india-rubber, before being applied, may be itself softened by any suitable means, and in this semi-plastic condition may be applied in place and have the cloth applied to the outer surfaces thereof. In such cases the pressure may be applied by the press at ordinary temperatures. When desired, however, the binding-cloth may be coated on one side with india-rubber of the requsite depth or thickness, and by any ordinary or suitable means. This compound material may be cut into strips of suitable width, and these may be folded over the edges of the bolting fabric and then compressed thereon under conditions of heat and pressure by means of the press to insure the firm adhesion of the adjoining surfaces of the india-rubber and the attachment of said combined material to the edges of the bolting fabric thoroughly and effectively. Ordinarily the india rubber and cloth when applied to the bolting fabric should extend inward from the outward edge about one and one-half inch—that is to say, when the strips of india-rubber and cloth are folded over the edge upon the opposite sides of the bolting fabric, said strips of india-rubber and cloth should have the width of about three inches. The bolting cloth or fabric may have the usual or any suitable width. In lieu of india-rubber, any of the usual or known equivalents thereof may be employed—that is to say, substances having like properties of elasticity, strength, plasticity, and adhesiveness combined with the property of more or less softening under conditions of heat, such, for example, as the compound very generally known as a "cement" composed of india-rubber, litharge and white lead. While the use of heat, as hereinbefore explained, is preferable, yet by the use of a cementing material capable of solidification at ordinary temperatures the attachment of the parts may be secured by means of the "flat pressure," so termed, alone. In further explanation of the advantages and merits of this invention, it is to be observed that when the edging is applied to the bolting-cloth by means of rollers, the latter act only momentarily upon the material, and the more perfect the operation of rolling the more the contact approaches a mathematical line. Inasmuch as the pressure is only between the nearest surfaces of the rollers, and as the latter rotate continuously, the pressure is only momentary at any one portion of the binding. This does not afford time for the cementing material and the parts which it is designed to connect to so accurately fit themselves into the desired relation, and the attachment of the binding in place is proportionally imperfect. This is particularly true with reference to bolting-cloth in which the binding is folded across the edge of the cloth with one part below and the other above, the upper and lower portion of the binding being thus cemented at the outer edge by that part which is folded across the edge of the bolting-cloth. By subjecting the binding thus applied in place, to the action of rollers, the result will be to press the flat portions of the binding out of place with reference to the edge, the tendency being to force the folded outer edge of the binding away from the edge of the bolting-cloth. Furthermore, the action of the roller will be to force the cementing material forward in advance of the roller, thereby removing it from between the pressed portions of the binding and that portion of the bolting-cloth to which said portions are designed to be affixed. This action of the rollers tends, therefore, to remove the cement instead of to affix it in place for connecting the binding to the bolting-cloth. The action of the roller upon the cement is, in fact, very similar to that of the well-known roller-wringers upon wet fabrics, the yielding materials being forced out in advance of the greatest pressure of the rollers. As compared with this, in attaching the binding to bolting-cloths, a very great advantage is obtained by means of this invention, inasmuch as this latter, by giving a direct pressure over considerable areas and in a direction perpendicular to the surface, causes the cement to be forced to unite directly through and to fill the meshes of the bolting-cloth, and thereby in the most secure manner attach the binding to said bolting-cloth.

Rickerson Patent Improved Roller Mill



ORIGINAL 6-INCH ROLLER MILL.

Requires Less Power to Drive,
Has Greater Capacity,
Better Granulation,
More Middlings

THAN ANY OTHER ROLLER MILL.

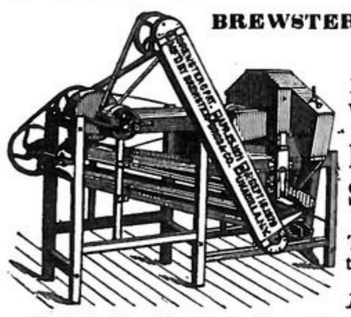
Patent Exhaust Attachment for taking away Generated Heat.

Positive movement of the rolls. We will furnish details upon application. Send for our Circulars before purchasing any Roller Mill.

O. E. BROWN MFG. CO.,

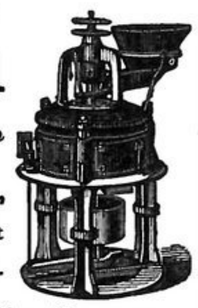
GRAND RAPIDS, MICHIGAN.

Buckwheat Refiners & Portable Mills



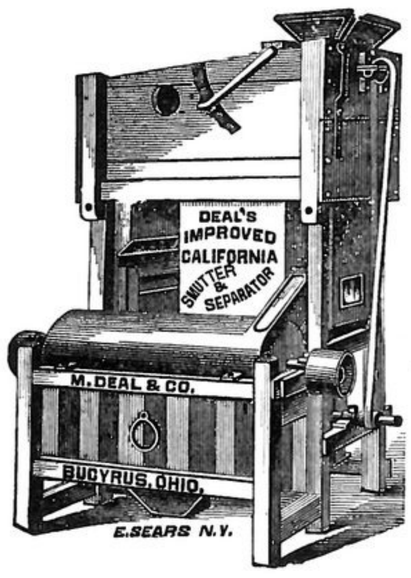
BREWSTER'S CELEBRATED
Buckwheat Refiner
Is the only machine whereby the greatest yields of
PURE, WHITE SHARP FLOUR
can be obtained.
The only reliable, practical and durable machine
IN THE WORLD.

THE POSITIVE ADJUSTMENT
AND AUTOMATIC
MIDDLINGS MILL
Is Strictly Self-Protecting
The Best Adjustment in the World.
And the only
Perfect Granulator
Grinds Cool, Self-Oiling, Great Saving of Power.
Simplicity and Durability Combined.



Satisfaction Guaranteed on all our Goods. Send for Descriptive Circular, giving Prices, Sizes, Terms, etc.

BREWSTER BROS. & CO. Unadilla, N. Y.



CALIFORNIA!

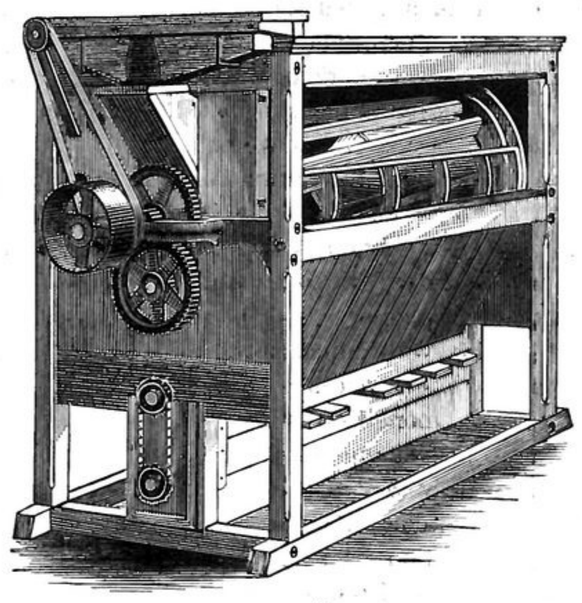
DEAL'S CALIFORNIA MAGNETIC
BRUSH SMUTTER
AND
SEPARATOR COMBINED

Warranted The Very Best In America.

The purchaser being the judge after 60 or 90 days' trial. We manufacture a complete line of Grain Cleaning Machinery, and guarantee every machine to give entire satisfaction or no pay. Send for circulars, it will pay you.

M. DEAL & CO.,
Sole Owners and Manufacturers,
BUCYRUS, OHIO, U. S. A.

C. N. SMITH'S CENTRIFUGAL REEL



IS BEYOND QUESTION THE
BEST IN THE MARKET
AND IS SOLD FOR
THE LEAST MONEY
While the operation of every Machine is
FULLY GUARANTEED.

Send for Prices, Lists of Testimonials, and Descriptive Catalogue.

READ THIS LETTER. THEY WILL DO AS WELL FOR YOU.

OFFICE OF LUDLOW MILLS, DAYTON, OHIO, April 23, 1884.

MR. C. N. SMITH.

We have been running the two Centrifugals since February, he first without any stop whatever, and are well pleased with them. We throw less stock on our Rolls, and make four to five per cent. less Low Grade than before we had the Machine. You can refer any one to us and we will be pleased to give it a good send off. Wishing you success, we remain, Yours respectfully, CHAS. S. DURST, Supt.

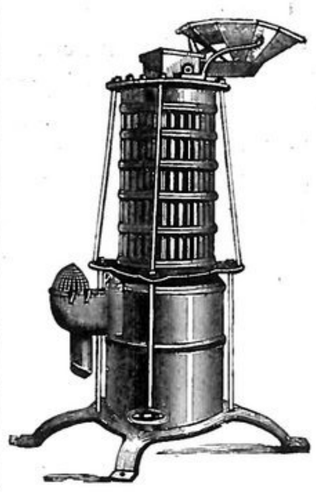
CHAS. SHUEY, Head Miller.

MANUFACTURED ONLY BY

C. N. SMITH, DAYTON, OHIO

MANUFACTURER OF MILL FURNISHINGS.

LORD BALTIMORE HOMINY MILL.



PATENTED SEPT. 28, 1880, *AND JULY* 26, 1881.

The Best, Most Durable, and Most Economical Machine.

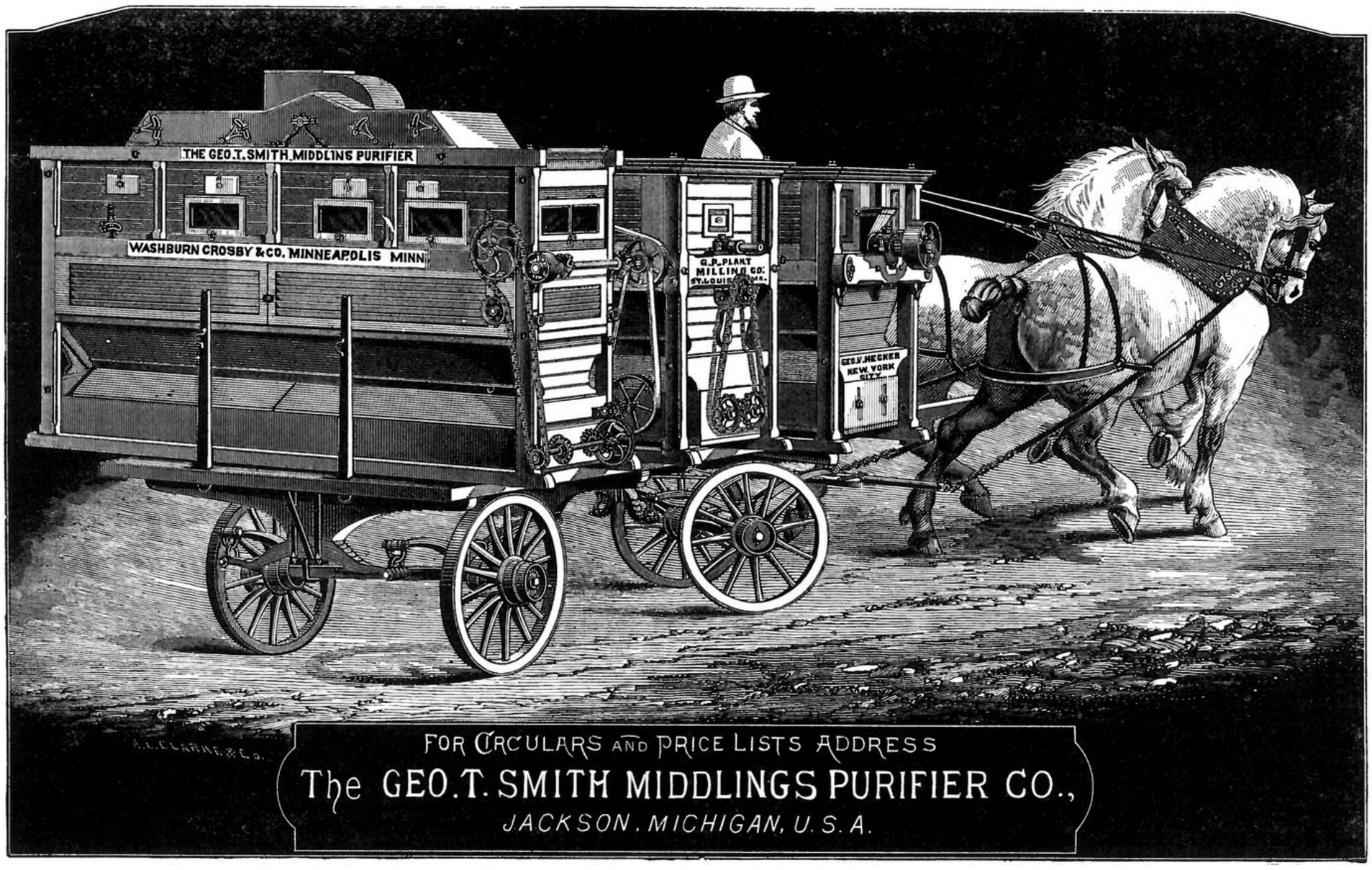
The Lord Baltimore Hominy Mill is no experiment, but is in constant use and giving unexampled results in several large mills. Its capacity is greater than that of any other hominy machine, being from three to five barrels of Hominy per hour, and in preparing the corn for Grits, Pearl Mill or Corn Flour, five to six barrels per hour. It is built of the best materials. The various cages are composed of an aggregation of staves, so that in case any of the staves are broken, they may be easily repaired with little trouble or cost.

For Prices, and further particulars, address

C. S. DAY, Patentee & Manufacturer, **KENT ISLAND, MD.**

Please address all orders for Castings and Hullers to

JAMES McMILLAN,
Nut Washer and Bolt Manufacturer and Machinist,
151 NORTH STREET, BALTIMORE, MD.



SCIENTIFIC AND MECHANICAL

THE PATENT OFFICE SURPLUS.

THE revenue of the Patent Office is largely in excess of its expenditures, and a surplus of two or three million dollars has been accumulated, says the "Mechanical News." On the other hand, the facilities of the office need enlargement, and the accommodation afforded by its present quarters in Washington is not adequate to the demand. It is thought that the working force of the office should be increased; and what is especially desired, in the interest of inventors and patentees throughout the country, is the preparation of digests or indexes of improvements thus far made in the useful arts. As the case now stands, with more than three hundred thousand patents in force, it is practically impossible for any unofficial person to inform himself as to the inventions already made, or the appliances in use, in any line of industry. Every year of course increases the complication and the resulting difficulty; and a point will soon be reached where even the official examiners will be unable to perform their duties with intelligence and thoroughness, unless at such expense and delay as will be insupportable to any but a wealthy inventor. We are, in fact, approaching a state of things which in its ripe development would bring us under a system not unlike that which Dickens portrays in his "Poor Man's Tale of a Patent." It is a favorite boast of Americans that they take a short cut and a plain method instead of following the English example of costly circumlocution. Here is one instance in which the comparison will not hereafter be greatly in our favor if measures of reform are not soon adopted. Either the petition of the inventors should be heeded, or the patent fees should be reduced. As we have once before remarked, the government does not need, and it is no part of its policy, to make a profit out of the business of granting patents. It appears that patentees do not ask that the charges should be cut down, if only the money thus raised is expended for the benefit of inventive industry. But to one or the other of these concessions their claim is manifestly just. It cannot be disputed, and should no longer be ignored.

INVENTIONS OF HALF A CENTURY.

The number of inventions, says a contemporary, that have been made during the past fifty years, is unprecedented in the history of the world. Inventions of benefit to the human race have been made in all ages since man was created; but looking back for half a hundred years, how many more are crowded into the past fifty, than into any other fifty since recorded in history. The perfection of the locomotive, and the now world-traversing steamships, the telegraph, the telephone, the audiphone, the sewing machine, the photograph, the cylinder printing press, chromo-lithograph printing, the elevator for hotels and other many-storied buildings, the cotton gin and the spinning-jenny, the reaper, the mower, the steam-thresher, the steam fire engine, the improved process for making steel, the application of ether and chloroform to destroy sensibility in painful surgery cases, and so on through a long catalogue.

Nor have we yet done in the field of invention and discovery. The application of coal gas and petroleum to heating and cooking operations, is only trembling on the verge of successful experiment; the introduction of the steam from a great central reservoir to the general use for heating and cooking is foreshadowed as among coming events. The artificial production of butter has already created a consternation among dairymen. The navigation of the air by some device akin to our present balloon would also seem to be prefigured, and the propulsion of machinery by electricity is now clearly indicated by the march of experiment. There are some problems which we have hitherto deemed impossible of solution; but are the mysteries of even the most improbable of them more subtle to grasp than that of the ocean cable, or that of the photograph or the telephone?

We talk by cable with an ocean rolling between; we speak in our voices to friends a hundred miles or more from where we articulate before the microphone. Under the blazing sun of July we produce ice by chemical means, rivaling the most solid and crystalline productions of nature. Our surgeons graft the skin from one person's arm to the face of another, and it adheres and becomes an integral portion of his body.

We make a mile of white printing paper and send it on a reel that a perfecting printing press unwinds and prints, and delivers to you, folded and counted, many a thousand per hour. Of a verity, this is the age of inventions; nor has the world reached a stopping place yet.

---

* * At the meeting of the National Academy of science at Newport, R. I., Prof. R. Pumpelly, who had charge of the survey of the country along the Northern Pacific in 1881, read a paper on the Mesozoic coals of the Northwest. The coals in Washington Territory, Northern Montana, Idaho, Oregon and Dakota are all cretaceous, from the top of the Larame formation down. From the Missouri river west to the Rocky Mountains, the coal layers are thirteen to sixteen feet thick, but are lignitic and crumble on exposure. West of that the layers are two to six feet thick, but are bituminous coking coals. In Judith basin, up to or past the British line, are coking coals from eighteen inches to five or six feet thick. The next great coal fields are west of the Cascade range. Here the thickness of carboniferous formations is at least 13,000 feet. All the bituminous coal has been studied, but not yet the lignite, which is less valuable. Some of these coals have been converted into a natural coke, having the same chemical composition as anthracite. The Bituminous coal is confined to strips along the Cascade range and Vancouver's island. total amount of carboniferous material is very great. The coal fields of Wyoming territory have no representative in the North.

---

* * Mr. Copeland, of Brockton, Mass., we are told by New York papers, has nearly completed the machinery which is being placed under the Union Fish Company's wharf, Provincetown, Mass., by which the rise and fall of the tide is to be the motive power. The work is only experimental, but everything is successful thus far. The apparatus consists of a float gliding up and down on studding, which turns a wheel, making only four revolutions a tide. This wheel is connected by means of shafts and belts to a series of other wheels, and in such a way that the terminal wheel makes 240 revolutions per minute.

---

* * A series of careful experiments made lately in Germany, in regard to the expansion of metals on cooling from fusion, appear to indicate the existence of the general law that all metals expand on solidification. Of the eight metals—tin, lead, zinc, bismuth, antimony, iron and copper—submitted to these investigations, six of them expanded at the moment of solidification, so that the solid was less dense than the liquid metal; these six were zinc, tin, bismuth, antimony, iron, and copper. The results obtained from the other two metals were not decided, but rather favored the fact of expansion.

---

* * Dry sand is recommended by a writer in the "Scientific American" as an effective power for running machinery. He claims that for a mill of any kind situated on a hillside there is no power so easily stored. The sand is handled by being conconveyed to an over-shot water wheel and is carried back in buckets to be used again. It is said to work fully as well as water. If this be true it will be utilized to a great extent on the sandy plains in this country and Mexico.

---

* * In filing large surfaces of cast iron, bronze or brass, a file with keen cutting teeth is required; use a new file on such surfaces. On narrow surfaces a file that is partly worn can be used with about as good effect as a new file. When a file is so called worn out on brass or soft metal it is in pretty good condition to be used on steel or iron. Many mechanics prefer such files to new ones.

---

* * Mineral wool is used for packing to deaden the sound between floors in buildings, and being incombustible it is now pretty generally used between the floors and ceilings in new houses. Mineral wool is obtained from the slag from blast furnaces, and is produced by throwing a jet of steam against the stream of slag as it flows from the furnace.

---

* * The United States Electrical Conference, which adjourned in Philadelphia recently, at the call of the chairman, Prof. H. A. Rowland, of John Hopkins University, will probably re-convene in December, to urge upon Congress the importance of standards of Electrical measurements and the establishment of a government bureau therefor.

---

* * Since the first of the year there have been 98 bank failures in the United States. Forty-one per cent. of these were due to speculation, directly or indirectly; sixteen failures were due to frauds and embezzlements. No cause is assigned for one-third of the failures.

The Milling World's Observatory

OUR MINNEAPOLIS LETTER.

[From our own correspondent.]

BUSY MILLERS—ENORMOUS FLOUR PRODUCTION—FAIR DEMAND FOR FLOUR, BUT PRICES AFFORD SMALL MARGINS OF PROFIT—WHEAT PRICES TAKE A TUMBLE—SOME NEW ENTERPRISES—GOSSIP OF THE FALLS—NOTES AND ITEMS.

There never was a time when Minneapolis turned out as much flour as it is doing now, and the output weekly grows, though not largely. For the three weeks just past, the flour production has averaged fully 25,000 barrels daily, or 150,000 barrels per week. This means the grinding of nearly 700,000 bushels of wheat each week. There are kept in operation twenty-one out of the twenty-two mills in the city, and each one is producing more flour than ever before. This is evidenced by the near approach that the actual production is coming to the highest capacity that the mills have been rated at in the past. It is almost a daily incident for one or more mills to improve on all former runs. The secret of this apparently greatly increased capacity is found to be in the peculiar formation of this year's crop of wheat. It is hard and dry, and grinds with great facility. It requires more power to the barrel of flour to break it, but once broken, it bolts with greater facility, and this is where the mills gain in capacity. The mills have all the water power that they need, and roll out flour in a manner that astounds the mill owners themselves, though each, individually, is calling on his miller to squeeze out a few more barrels. Although the water power gives promise of being equal to meet all demands made on it, the work of putting in the engines ordered some time ago progresses slowly, and by the new year the steam plants for the mills that are to have them, will be quite ready for use. It is said that had the prospects for low water this winter continued a few days longer than they did, other firms would have ordered engines, as they had about made up their minds to do so when heavy rains brought relief.

The appended tables show the receipts and shipments at Minneapolis for three weeks.

FLOUR.

Week ending—	Receipts. bbls.	Shipments. bbls.
Oct. 21	650	150,900
" 28	875	161,000
Nov. 4	750	152,800
Total	2,275	464,700

WHEAT.

Week ending—	Receipts. bus.	Shipments. bus.
Oct. 21	1,193,000	196,000
" 28	881,000	162,000
Nov. 4	517,000	185,500
Total	1,591,000	543,500

In the flour market there is a very fair demand for all grades, but prices of late have had to be lowered, and it is safe to say that the profits in milling are not what they were a month ago. Many mills, however, sold ahead and are now grinding on such orders. Freight rates from Minneapolis to Chicago have also been advanced from 30 to 35 cents per barrel. It was given out sometime since that two roads had assured our millers that no advance would be exacted; and the report comes now that at a meeting of the Northwestern Traffic Association in St. Paul on Thursday, the rate on grain was lowered to its old basis, and we suppose that this includes flour.

There seems to be no depth too low for wheat to sink to. In two weeks time, No. 1 hard has dropped 5½ cents in this market, closing Friday lower at 71½ cents. The uncertainty about election matters has had a demoralizing effect on the market, and dealers are holding off to see what the result will be. Receipts have fallen off considerably, and shipments have been unusually large. The stock in store here in elevators has increased from 2,040,000 bushels on Oct. 20, to 2,611,000 bushels on Nov. 3. After the latter 660,000 bushels is No. 1 hard; 30,000 bushels No. 2 hard; 1,115,000 bushels No. 1, and 152,000 bushels No. 2.

There has been a great deal of speculation lately as to what the Washburn Mill Co. would do in regard to rebuilding the Lincoln mill at Anoka. The local paper at that place recently came out in a long article, claiming that the erection of a mill much larger than the one destroyed, was assured, and described it in detail. The enterprises which W. D. Washburn has brought to Anoka, the Lincoln mill included, has had much to do with making the place what it is, and the citizens naturally grasp at every straw which they think gives any hope of the mill being rebuilt. The Mill Co. itself denies that any decision has been arrived at in the matter, but in the light of recent circumstances, many think that this denial may be taken with some grain of allowance. Timbers in large quantities, and evidently for a very large building, have been got out by the company at Anoka, and piled up near the mill site, and the old foundations are being repaired. These, together with other movements tending in the same direction, are accepted by many people as evidence that the mill is to be rebuilt in time to work on the next crop. Statements claimed to have been made by members of the company are a further basis for believing this. When approached upon the subject, however, they tenaciously stick to it that rebuilding has not been considered. They say that at some time there is a chance of the mill being erected, as the salvage from the fire was quite large, and cannot be utilized in any other way; but that the timbers referred to, have been got out only to permit them to season and get in good condition for use by the Company at any time that it may wish to go on with the enterprise. Having bought the Palisade mill in this city, the company is giving a larger milling capacity than it formerly possessed. The Palisade, however, being in poor condition when taken, some time will be required to elevate its flour to the high level of that of the Lincoln's. At the same time, the Palisade is doing well. Its system is being given an overhauling, and good effects are already reported. A crew of eight or nine millwrights are kept at work in the mill all the time, and some new machinery is being added. Two sets of Daverio and one Farmer rolls have recently been put in. The mill has a capacity of about 1,300 barrels, and is turning out about that much flour.

A plan by which it is thought that the Minnesota Elevator Co. can again be placed on its feet is to issue bonds to the amount of $250,000, bearing a low rate of interest, and running until they can be taken up. These bonds would not be for sale, but would be taken by the creditors. The debtors are to turn over all available assets, including, of course, the elevators themselves and all the property pertaining thereto. Then an executive committee of the bondholders would devise means for keeping in operation the elevator system as it was before, but with the advantage of complete renovation. This plan would give to the creditors all the property there is without litigation or expense, and, it is believed, would ultimately give the creditors dollar for dollar.

The Minneapolis Western Railroad Co. has been incorporated with a capital stock of $50,000 to build anew of iron, and operate the elevated tracks in front of the Galaxy, Zenith, Pettit, Minneapolis, Northwestern and Excelsior mills. The owners of these mills are the incorporators. These tracks are now constructed of wood and considered in a dangerous condition. In the spring a trestle work of iron will be substituted. The incorporators are John Crosby, Wm. Pettit, J. Sidle, C. A. Pillsbury, C. J. Martin, D. Morrison, H. W. Holmes, C. H. Pettit, and W. F. Cahill. The last named gentleman is president.

The Van Dusen Elevator Co. has been incorporated here with a capital stock of $150,000, one object of it being the operation of the 600,000 bushel elevator which is being erected in the northern part of the city. The incorporators are George W. Van Dusen, C. H. Chadbourne, of Rochester, Minn., R. W. Chadbourne, Columbus, Wis., and C. M. Harrington, A. R. Potter & Co., L. Baker, of Minneapolis. G. W. Van Dusen is president, R. W. Chadbourne, vice president, W. W. Huntington, secretary, and G. M. Harrington treasurer.

The Mazeppa mill and fixtures entire, were sold under the hammer at Red Wing on Thursday by the assignee for $28,100, to Paul Hanser, of St. Paul. The mill was valued in the schedule of assets at $51,000, which was considered a low appraisement, and the purchaser at $28,000 certainly got a bargain. It is believed to have been bid in by the creditors.

H. S. Wade, one of the stock holders of the Columbia Mill Co., is critically ill at his home in Boston. Wade was thrown from a buggy, and had his leg broken, and in an effort to save the limb from amputation, his life came near being sacrificed. Mr. Wade, however, is now believed to be out of danger.

The assets of J. G. Lawrence, who failed at Wabasha, Minn., together with the Wabasha Mill Co., are placed at $25,000, and those of the mill company at $50,000. The assignee, Bruce Florer, has taken possession of the property and will close up matters at the earliest possible moment.

The Head Miller's Association has $3,500 or over guaranteed for its monument fund, and a monument will probably be ordered quite soon. A meeting is to occur inside of ten days to take the matter under advisement, at which three mill owners will be present to help select a design.

Two social events of the season were parties given the past fortnight by L. Christian, one of the proprietors of the Crown roller mill and C. A. Pillsbury. That of the latter was given at the palatial West Hotel, and was the most brilliant affair that has ever occurred in Minneapolis.

The three Washburn mills for the month of October made 160,000 barrels of flour. While this is a record that the proprietors may well be proud of, the flour turned out by the two Pillsbury mills exceeded it. During one week the Pillsburys made 40,133 barrels.

The Belt Bran Packing Co. is once more endeavoring to do something. It has packed considerable bran and stored it for prices to advance.

A 25,000 bushel elevator to be built by a stock company at Northfield, is to be controlled by W. F. Meader & Co., of this city.

Frank Noble, one of the pioneer millers on the Falls, who has been employed in the Pillsbury A for about a year, has gone to Fostoria, O., on visit. It is not improbable that he will return to California, where he has already spent several seasons.

Washburn, Crosby & Co., and C. A. Pillsbury & Co., are the only firms that it is definitely known will have flour exhibits at the New Orleans exposition, although the Sidle, Fletcher, Holmes Co will probably be represented, and possibly a few others.

John Johnson, a Swede roustabout in the aPlisade mill, was smothered in a shorts bin on the 24th ult. He went into the bin to start the shorts, which had clogged, and was enveloped by them before he could get out.

The Pillsbury A mill a few days since made the enormous amount of 6,197 barrels of flour in twenty-four hours. It was done squarely, and certainly entitles the mill to the claim of being the largest mill in the world.

Ferd. Wohlgenannt, the Hungarian miller who attempted to run the Washburn A and found it too much for him, has lately become head miller of Tiedeman's mills at Collinsville, Ill., and O'Fallon, Mo.

The work of enlarging the Minneapolis mill to 900 bbls is now in progress, though the operation of the mill proper is not interfered with. It is expected that the new part will be completed by Jan 1.

The inside of the Pillsbury A is being plastered throughout. This is done to protect the walls from injury in case of fire, and give more light and a surface upon which less dirt will stick.

The Link Belt Machinery Co., of Chicago, have secured two large stores fronting on Washington Avenue, in the Windom Block, and will open a branch house here.

The Page mill at Fergus Falls, Minn., will be completed and ready for operation early next month. It is to have a capacity of 600 bbls.

W. F. Gunn has severed his connections with the Great Western Mfg. Co., of Leavenworth, Kan., and returned to Minneapolis.

Minneapolis, Nov. 8. CALEB.

Notes from the Mills.

A flour mill is talked of at Newmarket, Tenn.

A $30,000 flour mill it is said will be erected at Dallas, Texas, by Alex. Mason, of St. Louis.

The Case Mfg. Co., have shipped a No. 1 single purifier to Mr. Joseph Beers, at Fredericktown, O.

A flour mill has just been completed at White Lake, Dakota, at a cost of $25,000. Its capacity is seventy-five barrels a day.

The Case Mfg. Co., Columbus, Ohio, have an additional order from Click & Miller, Dayton, Va., for breaks, rolls, scalpers, etc.

An additional order for a No. 1 single purifier has been received by the Case Mfg. Co., from Messrs. Lucas & Dickens, of Hicksville, O.

D. C. Bloomfield, Sherman, N. J., is making some changes in his mill, and is adding two pairs of rolls, with patent automatic feed, furnished by the Case Mfg. Co., Columbus, Ohio.

An attempt was made by some one to destroy the dam of the McClure mill at Sauk Center, Minn., and to that end a channel was cut from a point above the dam, at the north end.

The Case Mfg. Co., Columbus, O., have an order from Castree, Mallery & Co., Flint, Mich., for two pairs of rolls, with patent automatic feed, to be shipped to Samuel Howard, Flint, Mich.

According to an order from Messrs. Castree, Mallery & Co., the Case Mfg. Co., of Columbus, have shipped two pairs of rolls and a No. 1 single purifier to Mr. Mart Clapp, at Rogersville, Mich.

Charles Arter is building a two-run water mill at Kirkwood, Neb., using machinery made for him by Nordyke & Marmon Co., of Indianapolis, Ind. This same firm is furnishing the machinfor two other new mills in the same country.

Royce & Shell are commencing the erection of a 100-barrel seven-break roller mill, with water power, to replace the mill destroyed by fire a short time ago. They have placed their entire contract with Nordyke & Marmon Co., of Indianapolis, Ind.

At the great St. Louis Fair, just closed, we are informed that the extensive mill machinery manufacturers, Nordyke & Marmon Co., of Indianapolis, Ind., carried away nine first premiums on different articles displayed by them (among which was their well-known roller mill), and also a $300 cash prize for the best display at the fair; all of which, in view of the many firms exhibiting, makes the affair a creditable victory for Nordyke & Marmon Co.

Adams & Baker, Neodosha, Kan.; Whetstone & Henderson, of Bloomfield, Ind.; W. H. Ladd, of Wheeler, Ark.; Hughes & Pixlee, Osborn, Mo.; Ferguson & Fullerton, Hudson, Ind.; A. S. Nickey, Elizaville, Ind.; J. M. Hadley, Desoto, Kan., and R. M. Stone & Son, of Scotland, Ind., are remodeling their mills to the roller system, using Nordyke & Marmon rolls, bolts and centrifugals, furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

A news item in this paper last June mentioned that Nordyke & Marmon Co., of Indianapolis, Ind., had introduced 26 pairs of their largest sized roller mills in the 2,000-barrel mill of the Anchor Mill Co., of St. Louis, Mo. This mill has taken first premium at the St. Louir Fair and Exposition on patent, bakers' and straight flours, in competition with many other first-class mills, and the lucky firm, in a letter to Nordyke & Marmon Co., attribute their success to the introduction of these rolls, and have also placed a large order for more roller mills.

The large flouring and grist mill belonging to W. G. Ransom, and occupied by E. L. Hoopes, at Springville, N. Y., was entirely destroyed by fire on the morning of Oct. 28. A strong west wind was blowing, and it was only by the utmost endeavors of the fire department, assisted by the large force pump belonging to C. J. Shuttleworth, that the extensive works known as the Springville foundry and wood shops, were saved. There was only $3,000 insurance on the mill; loss will be about $5,000; insurance on the stock $1,000; loss on stock about $2,000. There does not seem to be any doubt that the building was set on fire by some one. The large safe was ruined, but it kept its contents in good order.

Edward P. Allis & Company, of Milwaukee, Wis., are building for their exhibit at the Cotton Centennial Exposition at New Orleans, a miniature roller-mill plant of great beauty and ingenuity. The mill is three stories in height, and open on the sides, showing the machinery all complete and in action. The engine, which drives the mill, is a perfect model in miniature of the Corliss engines made by the firm. It is complete in all its parts, and will run as perfectly as the larger engines. The same is also true of all the rest of the machinery comprising the plant. All the details, shafting, pulleys, gearing, belts, &c., are accurate and perfect, and are in full view. The workmanship is of the finest, and the finish is very beautiful. This exhibit is both handsome and odd, and cannot fail to attract attention.

Elliott's flouring mill, at Coultersville, Ill., burned Nov. 8. The mill stopped at 6 o'clock, and about 10:15 p.m. the alarm of fire was given. The citizens were soon on hand with the fire engine, and had the fire under control when the supply of water gave out, and before any arrangements were made to get more the fire had marked the structure as its victim. The mill was built about seven years ago, and last year an elevator was added to it. The total cost of the buildings and machinery was about $20,000 or $25,000. The mill and stock in it were insured for $22,600, of which $4,000 is in the Home Insurance Company, of New York, and $600 in the Springfield, of Mass. The rest is insured with an agency at Bellville. There were also some mortgages upon the mill. It is generally believed that the fire was started by an incendiary, as it was set afire on the Monday night previous, but was discovered too soon for it to burn. As yet no one is bold enough to say whom he thinks did the deed, and it is still a mystery why it was done. The mill had been running day and night the most of the time since it was built, and it has, perhaps, done as much business as any mill of its size in southern Illinois. Its capacity was about 125 barrels per day, and it shipped to St. Louis one of the best brands of flour offered in the market, By this calamity sixteen men are thrown out of employment, not including the proprietors, R. B. Elliott & Son. It is a severe blow to the village and the country roundabout.

From Foreign Lands

GERMAN GRAIN TARIFFS.

From the Oesterr.-Ung. Mueller Zeitung.

THE German government has been more conservative on the question of the grain tariffs than on any other protective measure, of which it has recently adopted quite a number. It is evident that there is a sufficient reason for such an action, a reason that is well known to the political economist, but which is purposely ignored by the agricultural agitators. The commercial and political situation of the German empire is such at present that any increase of the grain tariffs must be looked upon as a useless measure. It is easy to prove this. The commercial treaty between Germany and Spain, which expires June 30, 1887, stipulates the tariff on rye at one mark (25 cts) per 100 kilos. All States which have asimilar privilege and are classed among the "most favored nations" can lay claims to the unchanged maintenance of this tariff until the expiration of the treaty with Spain. Only with the United States, Russia and the British Colonies can another form of tariff on rye be adopted prior to that time.

These conditions easily explain the renitency of the German government with regard to this question. Of course, it can be said that the tariff on all other cereals, excepting rye, can be raised in the near future, without interfering with existing treaties; but such a legislation would be far from satisfactory to the grangers, because the rye tariff has always been the leading factor in similar agitations. The German government will readily abstain from an increase of tariff on barley, corn, malt, leguminous fruits, etc., in view of other industries which depend upon their import; so there will be nothing left but wheat and oats, and both are of minor importance for the German larger landowners as far as tariff laws are concerned. So the principal demand of the Agrarians cannot be acceded to before July 1, 1877, and their agitators purposely mislead the agricultural population with regard to the situation by creating hopes and expectations for increased grain tariffs everywhere, when in reality it can at best but apply to the imports from America, Russia and the British Colonies.

But even with regard to these countries, the measure would be useless. We have no means to prove the birthland of the grain, and it would be shipped into Germany across such states which class among the most favored nations on the commercial treaties; this would present little, if any difficulty, as the ports of Belgium and Holland even now are of vast importance to the German grain import. The sole end in view in all such cases, the increase of grain prices on the home markets, would not be attained in this manner, because the prices are not altogether dependent upon the United States or Russia, but are also influenced by those countries which are classed among the "most favored nations" and whose products are admitted on a low tariff rate. All those who claim that the present low prices of grain are due to the low tariff, had better wait until 1887 and obtain the market value for that date, for it is a grave question whether they will find the same conditions then. In addition to this, both the United States and Russia import largely of German products, and any increase of grain tariffs, designed specially to their disadvantage, may induce them to adopt measures of retaliation.

The agricultural population in many sections of the country are beginning to understand the uselessness and actual harm attending the increase of the tariff, and their more intelligent members are willing to admit that their difficulties do not rest entirely upon the tariff. But by far the most important fact consists in the knowledge that the present commercial relations of the German Empire make it impossible for the government to change the existing grain tariffs, at least during the next few years; and this fully explains the renitency with which the Imperial government handles this delicate question.

NOTES.

In accordance with a circular published by Messrs. Bullock & Co., the amount of rice which was shipped to the United States from London and Liverpool during the time from January 1st, 1884, to September 9th, 1884, amounted to 29,063,776 pounds against 25,305,056 pounds imported during the same period tbe year previous. The increase therefor is 3,758,720 pounds.

The results of the German occupation census of the 5th of June, 1882, now published by the Imperial Statistics Office, show that 42.5 per cent. of the population of Germany are engaged in agriculture, including gardening, forestry and fishing; 25.5 in industry, including mining; 10 in commerce, including the carrying traffic and the sale of food and drink by retail; 12 in the public service and otherwise, or not at all.

The channel tunnel promoters have by no means given up all hope. A large party lately visited the works with Sir Edward Watkin, chairman of the dormant company. The heading was lighted by the incandescent electric lamps, and the party proceeded to the end of the gallery, where the Beaumont borer is situated. Although the injunction of the Board of Trade is now faithfully observed, the machinery is regularly attended to. Notwithstanding the length of time the works have been suspended, little or no water has percolated into the heading.

The *Daily News* correspondent, telegraphing recently from Paris, says that there is just as great an outcry there as in London about the disproportion between the price of flour and bread. It is erroneously, though generally, supposed that the government can no longer fix the price of bread. Although in the time of the Empire the bakers' trade was declared open, a law of 1791 survives. The Government is unwilling to interfere with the law of supply but desirous that the poor should derive their benefit from the splendid harvest, the mayors in many country towns have resorted to the old practice of fixing a tariff. A Ministerial circular has been issued on the subject, and unless the Paris bakers voluntarily make considerable reduction they will shortly be brought to book.

It is not a matter of wonder that English land owners cry aloud for protection against ruinous competition of cheap agricultural products of the North and South American continents and Australia, an Exchange tells us. In Essex no less than 30,000 acres of the best farms vainly go begging for tenants. Within 30 miles of London 170 acres were lately sold for £2,500, for which twice the sum was refused ten years ago. The case is still worse in Ireland. Low prices and high rents must finally expatriate or starve to death the whole British agricultural class, or else they must be protected by a discriminating tariff on imports. The manufacturing and mercantile classes are the most numerous, and they will not submit to the policy of protection, which means higher wages for labor, and improved condition of farmers and their families. As a remedy, Lady Catherine Gaskell, a representative aristocrat, proposes in a magazine article, that farmers and their wives and daughters should cease to be educated, should avoid pianos and decent clothing, rise at 3 o'clock in the morning, and spend all day among the beasts in the field. She points the moral by bringing forward a model farming family, whose chief peculiarity is that they speak atrociously bad English and eat meat only once a week.

THE Grain and Flour Trade

Office of THE MILLING WORLD.
Buffalo, N. Y., Nov. 12, 1884.

While no particular activity characterizes the market, there is becoming prevalent an opinion that at current prices wheat is a better property to purchase than to sell. The very fine fall weather has stimulated deliveries by the farmer, and as stocks accumulate prices retrograde until it is now asserted they have reached a level so low that the advent of impassable roads and stormy weather will enable prices to be materially advanced by those who will then have control of supplies. Prevalent as this opinion is becoming, purchasers are seemingly without the confidence which inspires investment. Chicago calculations place the visible supply at 38,343,187 bushels. New York calculations make it 35,594,729 bushels. The "crowd" sold on the Chicago figures and bought on the New York figures. The carrying charge between November and December wheat is now at the rate of 4⅞ for a full month, and has been lately increased from 2½c to 3¼c, which shows an aversion to the actual grain, with the speculative buyers getting out of November through fears of deliveries. Estimates from Chicago point to a decrease in the winter wheat planting west of the Mississippi river.

Full receipts of flour are giving to the market rather a bearish cast, but prices are not quotably changed. The low grades may be termed steady because scarce. The medium and high grades may be termed weak and irregular. The export demand for flour is moderate; the trade demand is slack. Rye flour is in fair demand (demand fully up to supply) and market is firm at former prices. Buckwheat flour is dull and heavy because receipts are increasing and demand is no better. Corn goods are firmly held, with demand moderate and prices without decided change. For mill feed there has been a fair demand, freely met; market closes weak at the reduced quotations.

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring $4.50@5.00; straight NorthernPacific spring, $5.00@5.50; amber, $5.00@5.15; white winter, $4.75@5.25; new process, $6.00@6.50; Graham flour, $4.00@5.00. Western straight Minnesota bakers, $4.75@5.00; clear do, $4.50 @5.00; white winter, $4.75@5.00; new process, $6.00@ 6.50; low grade flour, $2.50@4.00. OATMEAL—Ingersol $5.75; Bannerman's $6.00; Akron $6.25. CORNMEAL—Coarse, $1.00; fine, $1:10 per cwt. RYE FLOUR—In fair demand $4.00@4.25. WHEAT—Weak. Sales 5,000 bu No. 1 hard Northern Pacific at 81c, 11,000 bu do at 80c, 16,000 bu No. 1 Northern to arrive at 76c, afterwards offered at 75½c to arrive and 75c seller last half Nov., at which price two boat-loads were said to have been sold. For No. 1 hard, at the Call Board, 80½c asked Nov., 81½c asked Dec., 80c asked year, 83c asked 82c bid Jan. Winter wheat quiet; sale four car loads No. 2 red at 80c. CORN—Steady. Sales on car load No. 2 at 50c, and five do No. 3 and special bin at 46c. OATS—Steady. Sales one car load No. 2 white at 32c, and one do mixed at 32c. BARLEY—In fair demand. Sales three car loads State at 77c, seven do bright Canadian at 77c, and ten do No. 2 Nebraska at 66c. RYE—State nominal at 55c, and No. 2 western at 57c.

FOREIGN EXCHANGE.

The market for sterling was fairly active and steady, some demand being created by banks investing a portion of their surplus money in long bills. Commercial bills are rather scarce. Posted rates closed at 4.80 for 60 days' and 4.84½ for demand. The actual rates ranged: At 60 day's sight, 4.79¼@4.79½; demand, 4.83¾@4.84: cables, 4.84¼@4.84½, and commercial, 4.77¾@ 4.78. Continental exchange dull; francs, 5.26¼ and 5.25⅝; reichsmarks, 94¼@94⅜ and 94⅞@ 95; guilders, 39⅞ and 40⅛. The closing posted rates were as follows:

	60 days.	30 days.
London	4 80	4 84½
Paris francs	5 23¾	5 20⅝
Geneva	5 23⅛	5 20
Berlin, reichsmarks	94⅝	95¼
Amsterdam, guilders	40	40¼

NOTES.

A two-run mill is being erected at Shady Grove, Ky., for Jones & Nash, who get their outfit of Nordyke & Marmon Co., of Indianapolis, Ind.

A grain inspection law will probably be passed by the next Legislature in Dakota.

D. H. Turner, of Pearson's Mills, Ala., has ordered the machinery for a three-run new process mill, of Nordyke & Marmon Co., of Indianapolis, Ind.

Three pairs of rolls with patent automatic feed have been ordered by Messrs. A. B. Childs & Son, of London, England, from the Case Mfg. Co., of Columbus, O.

John Tontz, of Girard, Kan., is building an improved grain elevator, having procured his plans and machinery of Nordyke & Marmon Co., of Indianapolis, Ind.

Breaks, rolls, purifiers, scalpers, centrifugal reels, have been ordered from the Case Mfg. Co., of Columbus, O., for the mill of Mr. B. M. Allison, Fairville, W. Va.

The big elevator E, at Duluth, is now receiving grain. The machinery was started up on Oct. 29 last, and everything has worked smoothly; the new machinery started up without a hitch.

The Simpson & Gault Mfg. Co., of Cincinnati, have sent an order for a Little Giant break machine to the Case Mfg. Co., Columbus, O. The machine is to go to Mr. W. H. Koerner, at Medora, Ind.

Mr. Jas. S. Oakes, of Steubenville, Ohio, proposes to erect one of the largest flouring mills in the South, at Chattanooga, Tenn. The mill will be located on the river Bluff, and will have splendid water and railroad facilities.

The first instalment of Manitoba wheat recently arrived in Montreal. It was only 200 car loads and it came by the Canadian Pacific line. The harbor board has allowed the Canadian Pacific to extend their tracks to the wharf so that the wheat can be emptied into barges.

Deubel Bros., millers, etc., at Ypsilanti, Mich., propose to light their mill by electricity, and make the citizens a proposition to furnish light for stores, etc., at $1 per month for each lamp. As they use their inexhaustable water power to drive the dynamo machines, they can furnish the light very cheaply.

The Union Mill Co., of Union, Oregon, recently despatched their president and treasurer east to arrange for the purchase of a 100-barrel roller mill outfit. Their choice fell upon the machinery and roller mills manufactured by the Nordyke & Marmon Co., of Indianapolis, Ind., and they therefore contracted for an outfit using sixteen pairs of rolls.

A contemptible attempt was made last week to fire the Zumbro flouring mill, now owned by John J. Fulkerson, at Rochester, Minn. Patent fire kindlers had been heaped on the outside of the mill and set on fire, but the blaze was discovered before any material damage was done. Firebugs are being watched for now with shotguns, and their chances are slim, if caught.

The wheat receipts at Duluth for the month of October amounted to 6,599 cars, against 6,455 cars for September. This was the largest single month's receipts previous to October. The receipts for the two months of September and October aggregate 6,527,000 bushels. The shipments for October were 3,150,000, and for the two months 9,535,000 bushels. All this was from elevators A and B, except about 16,000 bushels from the Duluth and Western's new elevator. Duluth leads the whole country in the amount of shipments for October. The receipts for the week ended Nov. 8 amounted to 863,500 bushels. The Chicago receipts for the same time were 1,176,000, at Minneapolis 843,000, and at Toledo 643,000. The shipments for the week were 511,365 bushels.

A very lively time was had recently on the Duluth board of trade in regard to making the Duluth and Western elevator E "regular," that is making the use of its wheat receipts on the board. The discussion was a long one and resulted in a tie vote, ten to ten, which, of course, is unfavorable to the house. Ever since this house was first put up, a local paper tells us, it has met with a series of troubles, and although the company has done all in its power to remedy them, many members of the board seem to still think it unsafe. It has been braced in accordance with architect's recommendations, and what little wheat has been in it so far, has been held all right. It is claimed by those against the house that it is too slow a shipper, and that its position is unfortunate in more ways than one. The matter is not settled, however, by the action of the board, and it will undoubtedly come up again for final settlement. It is to be hoped that the difficulty can be remedied and the house made regular, as so large an investment as this house has been, should not prove unremunerative, and a positive loss to its stockholders.

THE PANAMA CANAL PROJECT.

A recent letter from Mayor Edison, enclosing an exhaustive statement from his naval attache, Commander Taylor, on the subject of our commercial relations with South American States, has been made public. The Commander argued that the Panama Canal scheme would prove of little service to us, and in conclusion said:

"I submit to you, therefore, that the present moment seems a most fitting one for the ports of our Atlantic and Gulf seaboards to take energetic, united and immediate action looking toward obtaining some Isthmian transit. I respectfully recommend, therefore, to you and to the commercial and maritime bodies of this city that your Honor, as Mayor of New York, seconded by those bodies, communicate with the mayors of principal seaports from Maine to Texas, inviting representatives of those cities to meet in conference without delay to discuss this matter and decide upon a route or routes, which shall be urged upon the National Congress immediately upon its meeting in December. The time is indeed ripe for action on this subject. It is well known that agents of the French Company are now in Nicaraugua, using every effort to obtain those concessions which, having been granted to us, were unfortunately permitted to lapse. Nor can we doubt that similar influences will be brought to bear to prevent other routes of transit from being utilized, which, once begun, would injure or destroy the prospects of the impracticable scheme of a sea-level canal at Panama. In a very short time the marine railway across Tehuantepec, or the canal across Nicaragua, or both of them, can be constructed; but immediate action on the part of our commercial public is needed to insure some Isthmian transit being provided. Such transit would do more to build up our commercial marine than any other one thing could probably do. The natural field for our commerce, the natural markets for our goods, are those neighboring localities now occupied largely by German products and German ships. That something must be done in thisdirection is acknowledged by all who have examined the subject, and I need not suggest that New York's natural office, from her greatness and importance as a seaport, is to lead, not to follow, in an affair of great commercial interest. I am prepared to submit to you a more minutely detailed report, giving plans, estimates and official reports, but I respectfully suggest that, meantime, steps be taken looking to an immediate conference. * * * I have considered only the direct commercial aspect, the need of Isthmian transit, the likelihood of never getting it by Panama, and the certainty of never getting it in any practical, economical or satisfactory manner by that route. Routes do exist. Nicaragua and Tehuantepec are thoroughly known, and I submit that energetic steps should at once be taken by those most interested to secure some Isthmian transit."